TELEPHONE ENGINEER and MANAGEMENT

MARCH, 1948

the story of

coal

in Franklin County, Illinois

The coal that fires the furnaces of industry is the most important mineral resource of Illinois. This State contains one of the richest soft coal deposits in the entire world—and is now producing approximately one-quarter of the world's supply. Assuming that the world's annual consumption of bituminous coal is one and one-half billion tons, there is enough beneath the surface of Illinois to supply the world's need for the next 130 years!

The 13 shipping coal mines in Franklin County employ nearly 8,000 workers. During the year ending December 31, 1946, (the latest available figures) these 13 mines contributed 14 and one-half million tons of coal toward the 25% of the world supply mined in Illinois.

Coal Mining is a specialized business—so is Telephone Directory publishing. The Illinois Commercial Telephone Company recognizes this. Therefore, our specialized organization has been employed for the past 11 years to publish Telephone Directories for the Illinois Commercial Telephone Company for all of the cities which it serves in Franklin County. As a result, the subscribers served by the Illinois Commercial Telephone Company have received better telephone service through the medium of accurate, attractive directories, consistent with the high standards of the Telephone Industry. Further, the Telephone Company has been relieved of all details of directory publication and at the same time the gross advertising revenue from directory operations has increased considerably.

Your telephone directory should be a PLUS factor in your operation. It should be a hard-working, money-making ambassador of good will for your Company. If, somehow, it seems to fall short of these objectives we would be happy to submit a Directory Service Plan tailored to the needs of your Company. No obligation, of course.

General Telephone Directory Company

Eastern Office: 185 North Wabash Avenue, Chicago 1, Illinois. Telephone State 5478
Western Office: Press Telegram Building, Long Beach 12, California. Telephone 6-7221

Telephone apparatus patented in 1876 by Professor Bell.
Models made from Figure 7 in Bell's original patent.

72 YEARS AGO THIS MONTH
The first telephone patent was issued

On March 7th, 1876, just three days before Professor Bell uttered the famous sentence, "Mr. Watson, come here, I want you," his first telephone patent was issued. Three months later he was demonstrating his telephone at the Philadelphia Centennial. In another four months the first two-way telephone conversation took place, to be followed in 48 days by the first long distance call.

Telephone progress set a fast pace right at the start . . . picking up speed as the years rolled by. Today, more is being accomplished, and in less time, than at any other period of telephone history. Better and better service for more and more people, is still the dominant factor in the telephone tradition of faithfulness and dependability.

In Exide Batteries you will find the same dependability for which telephone service is famous throughout the world. Since 1895, Exide Batteries have been proving themselves worthy of that trust.

Exide
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto

IT SEEMS TO US

By the time warm weather comes to Virginia the B. L. FISHERS of Martinsville, Va., will have completed their winter home in Clearwater, Fla. Mr. Fisher, now in his 70th year, is doing the building just as he always does, as his hobby does not include the work of a contractor. He informs us just about $1 million has been spent, by the telephone company he heads as president, in new additions since wars end.

• • •

ROBERT A. OLEN, general manager of the Four Wheel Drive Auto Co., Clintonville, Wis., made his philatelist friends and business associates happy on February 25th when he addressed Air Mail letters to all of them to be carried on the first flight of Air Mail from Clintonville. Each envelope was appropriately stamped for the occasion showing map of Wisconsin Central Airlines that is now making regular flights.

• • •

The popularity and size of our 1948 Buyers Directory & Composite Catalog which includes our Handbook has caused a slight change in plans as we had hoped to mail it with this issue of your magazine. Because of its larger size and consequent larger job of production we have decided to mail it to you in a separate package later this month. There will be no extra charge to subscribers.

• • •

JIM KELLOGG, popular president of the Kellogg Switchboard & Supply Co. will be Chairman of the recently appointed USITA Committee to handle the annual banquet and entertainment at the national convention in October. Jim is an Ideal choice as he served on the Pioneer association committee that formerly sponsored the banquet.

• • •

Add to our Camera addicts, section: BUD RUNZEL, head of Runzel Cord & Wire, and his Sales Manager BOB SAUNDERS. If our growing list adds many more that make a hobby of photography we will have to organize a Camera Club for TELEPHONE MEN.

The National Telephone Magazine

TELEPHONE ENGINEER and MANAGEMENT

MARCH, 1948 **VOL. 52, NUMBER 3**

Editor, RAY W. SMITH • *Advertising Director,* ROY F. SMITH
Managing Editor, JOHN G. REYNOLDS • *Promotion Manager,* DON C. SORENSON
Washington Bureau, ROLAND C. DAVIES *and* FRED HENCK
Circulation Mgr., BERNADINE STEPHENS • *Production Mgr.,* MARGARET INDIA

ARTICLES

Editorial—"What If Toll Should Slump?"		25
Cable Fault Location Techniques	B. C. Burden	32
USITA Washington Office Serves Independent Industry		35
Indiana Association Meetings Stress Good Service—Adequate Rates		48

FEATURES

TELEPHONE ENGINEER NEWSLETTER		9
News Briefs		29
Washington Bureau Reports	Roland Davies, Fred Henck	30
Practical "How To Do It" Suggestions	Myrle Shafer	37
Court & Commission Activities		44
Line and Desk Discussions	John S. Reed	51
Telephone Engineer Handbook Tables		53
Bell System's '47 Net Drops		62
The Back of the Book	John G. Reynolds	82

DEPARTMENTS

It Seems To Us	4
Tele-Quotes	6
New Products Showcase	12
Free Literature Department	18
Suppliers' News Briefs	74
Classified Advertising	78
Advertisers' Index	81

COVER: This panoramic shot was taken at the Calapooya River crossing near Halsey, Oregon. The Calapooya was one of 10 major streams crossed in Oregon by coaxial cable.—TYSON PHOTO.

Published monthly by TELEPHONE ENGINEER Publishing Corporation
7720 Sheridan Road - Phone Rogers Park 3040 - Chicago 26, Illinois
West Coast Representatives, BRAND & BRAND
1052 West 6th Street, Los Angeles, California

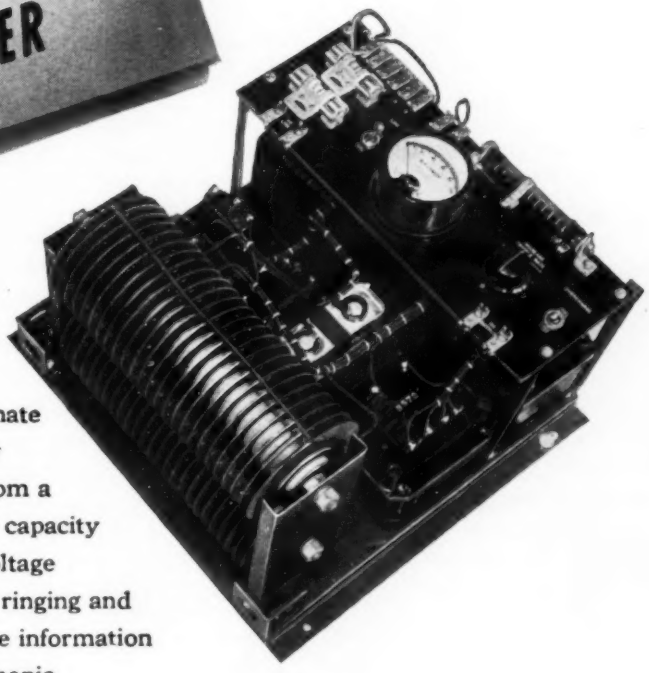
Copyright 1948 by Telephone Engineer Publ. Corp.

VOLUME 52, NUMBER 3. Published monthly by Telephone Engineer Publishing Corporation. Office of Publication, Pontiac, Illinois. Executive and Editorial Office, 7720 Sheridan Road, Chicago, Illinois. Subscriptions: U. S., Cuba, Mexico, $2.00 per year; Canada $2.50; in all other countries, $4.00. Single copies, U.S.A. 20 cents. Entered as second class matter at the post office at Pontiac, Illinois, under the act of March 3, 1879.

Easiest way to build CUSTOMER GOODWILL

Keep Your Harmonic Equipment RINGING TRUE

. . . with the RAYTHEON RECTICHARGER



Simplest and surest way to eliminate "ringovers" due to variation in frequency is to operate the ringing machine from a small battery floated across a separate, low capacity Raytheon RectiChargeR. The constant voltage supplied insures constant frequency, accurate ringing and lowest cost operation and maintenance. Complete information about this better method of operating harmonic ringing equipment will be furnished gladly on request. Write for it.

RAYTHEON

RAYTHEON MANUFACTURING COMPANY

COMMERCIAL PRODUCTS DIVISION · WALTHAM 54, MASS.

Industrial and Commercial Electronic Equipment, Broadcast Equipment, Tubes and Accessories

Excellence in Electronics

SALES OFFICES: ATLANTA BOSTON CHICAGO CLEVELAND DETROIT NEW YORK WASHINGTON

EXPORT SALES—Raytheon Manufacturing Company, International Division, 60 East 42nd Street, New York 17, N. Y., MU. 2-7440

No. 2

Highlights of wire communication

"HOSTILITIES WILL CEASE ON THE WHOLE FRONT ON NOVEMBER 11 AT 11 A. M."

DISPATCHED from Marshall Foch's headquarters early on the morning of November 11, 1918, this message marked the end of World War I. Transmitted in both French and English, this telegram brought to a close the greatest war the world had known up to that time.

In peace and war, since the earliest days of wire communication, Hemingray Insulators have contributed to the efficiency of the telegraph and telephone. Experience and research make Hemingray Insulators the finest obtainable today. Manufactured by American Structural Products Company, Subsidiary of Owens-Illinois Glass Company.

Write today for the complete historical outline of insulator development.

Hemingray Number 53

•

Hemingray Insulators have been leaders in the communications field for over eighty years.

HEMINGRAY INSULATORS

American Structural Products Company
MUNCIE, INDIANA
Subsidiary of **Owens-Illinois Glass Company**

WHENCE:—"Before any one of the millions now clamoring for telephone service can be served some one has to risk a substantial sum of money with which to buy the essential material and labor. Comes now the boys and girls who drive the old jalopy, instead of a new black market model, that they may hope for a more secure old age demanding higher wages for their sacrifice. Late surveys show that wages on borrowed money have advanced in recent weeks and that equity is calling for six per cent or better.

Add to this the pronounced increase in ratio of investment required as a result of spiraling material and labor costs and couple it to doubled and redoubled operating costs and it takes little imagination to realize that $2.00 and $3.00 telephone rates are . . . relics of another era; so why delay that application for relief?"—**Newsletter of Georgia Telephone Association.**

• • •

REPRODUCTION THEORY:—"Of course, we in Ohio, are not unmindful of the criticisms that can be and are levied at the 'reproduction theory' of evaluating utility property, particularly, where this theory contemplates an exact duplication of an existing plant as most of the judicial decisions on this subject contemplate. I think we must admit that no one in rebuilding a plant would exactly duplicate an existing plant.

He would, on the other hand, try to build a plant cheaper if possible and certainly more efficient. In any event the cost of reproducing a plant might well mean the cost of building another plant that will do the work of the old one and compete with it. Upon this theory if, because of inflation or otherwise, the cost of reproducing the plant should increase, that higher cost of reproduction should be the basis of fixing value for rate making, and by the same token if, because of deflation, the cost of reproduction goes down there should be a reduction in the rate base accordingly."—**Donald C. Power, attorney, Columbus, Ohio.**

• • •

"OF GRAVE CONCERN:—"This situation is giving this Commission grave concern because it is obvious to this Commission that a Company in this plight is not in a position to get new money needed for its unprecedented expansion program by the sale of stock or bond issues. It is, therefore, apparent to this Commission that unless the several regulatory bodies, including this Commission, do not provide rates which will provide a fair profit to the Company the expansion program needed will be crippled or negated. While this Commission will provide rates which it deems adequate in this case, it wants it emphatically understood that it is unalterably opposed to granting the Company any increase in revenue for the purpose of subsidizing any losses which are sustained or may be sustained in any other state or states in which the Company operates.

It must be kept in mind that telephone service is different from that rendered by any other utility in that all parts of the country are interconnected. People in this State talk to people in other states; people in other states talk to people in this State, and if the service in any state through which their conversation is transmitted is poor, the whole service is poor just as no chain can be stronger than its weakest link."—**Excerpt from order of North Carolina Utilities Commission granting rate adjustment request of the Southern Bell.**

Will you be able to stay, snug and comfortable, by your fireside—or will rust-weakened lines and emergency calls drive you out into a howling storm?

You can seal out relentless rust and all its headaches by using Copperweld Line Wire. And, by using it consistently, you can bring your outside plant to a new high in trouble-free efficiency at a low annual cost. Copperweld's thick molten-welded copper covering completely resists corrosion and its permanently protected alloy steel core provides the strength and stamina to withstand heavy ice and wind loads.

Play Safe! Write "Copperweld" into your line wire purchase orders and your mind can be at ease when the next storm hits your territory.

Engineering data will be mailed on request.

COPPERWELD STEEL COMPANY
GLASSPORT, PA.
SALES OFFICES IN PRINCIPAL CITIES

Copperweld NON-RUSTING **Line Wire**
SOLD BY LEADING DISTRIBUTORS

Highway Maintenance Bodies

mean warm crews and organized equipment for

faster, better work

LOOK at the roomy, heated crew quarters of this new Highway Line Construction and Maintenance Body! See how perfectly arranged space for all tools and materials saves time! Even in bitter cold weather crews arrive warm, comfortable, ready to go to work with all equipment accessible. No waiting to flex stiff fingers and cramped leg muscles!

This work-speeding Highway Body fits a 1½ or 2-ton chassis. Accurate balance insures easy handling and long life. Crew compartment extends full width of body, with ample room for three men and a folding shelf for use as lunch table or foreman's desk. Both driver and crew have ample vision forward and back.

Other famous Highway equipment includes earth boring machines, pole trailers, reel trailers, splicer's trailers, winches and power take-offs. Write to us.

HIGHWAY TRAILER COMPANY

Manufacturers of: Utility Bodies • Winches • Earth Boring Machines • Pole and Cable Reel Trailers and other Public Utility Equipment.
General Offices: **EDGERTON, WISCONSIN, U. S. A.**

NEWSLETTER
TELEPHONE ENGINEER

Fortnightly TELEPHONE ENGINEER ★ TELEPHONE ENGINEER AND *Management*

ON THE 1st OF EACH MONTH ON THE 15th OF EACH MONTH

NEWSLETTERS *on Alternate Weeks*

March 15, 1948

Dear Sir:

On telephone company earnings, annual reports for 1947 reflect general slump in net earnings that appears to be rule rather than exception. Cause for earnings' decline is clear. World War II, like all wars produced inflation affecting all business. During war, increased costs were offset by rising volume of exchange & toll business, handled without normal increases in plant investment & force provisions. In '46, war-swollen toll traffic subsided; expenses continued to soar while required adjustments in rates lagged. Results are now reflected in operating statements.

Review of annual reports shows earnings' drop is national rather than sectional. Examples: Western Light & Tel. Co., Kansas City, Kans., reported net income available for common was $652,859 in 1947 compared with $704,473 in 1946. This equaled $2.77 per share, against $2.98 in preceding year. Yet, gross revenues were at record high of $5,227,082, & number of customers mounted to 93,200, also new record.

Ohio Bell reported 11.1% decline in income available for fixed charges & dividends despite increase of 140,000 telephones in service - expects downward trend of return to be accentuated.... New York Tel. Co. found that operating revenues increased 7% over 1946; operating expenses jumped 12%, while earnings available for interest & dividends slumped approximately 20%, being 6.2% for 1947 compared with 7.8% for 1946.....Pacific Tel. & Tel. came up with 6.2% increase in operating revenues over 1946; 10.7% operating expense increase & decline of 25.9% in operating income.

* * *

FCC, faced with deciding several suggested revisions to its order on telephone recorder use & numerous objections by recorder manufacturers to proposals of telephone companies, postponed effective date of its "final" order in matter from Mar. 1 to Apr. 1.

Most recent of manufacturers' filings was on Feb. 24 from SoundScriber Corp., voicing opposition to Bell System's suggested tariff of $3 monthly for tone warning device & connecting unit, & asking that any FCC action giving telephone companies "exclusive jurisdiction" over warning-connector unit be delayed until cost studies of equipment can be made.

In asking delay in any revision of FCC final order, SoundScriber asked FCC to require Bell companies to establish "reasonable" arrangements for sales demonstrations of devices.

* * *

Our Research Dept. dug up facts on principal metals sorely needed by expansion-improvement minded telephone industry. Found copper & lead demand remains high with wire makers top buyers of copper. Meanwhile, some improvement in brass mill demand has been reported. Wire mills still are continuing to absorb large tonnages.

Some industry members assert, however, that though wire mill copper buying remains heavy, there has been change in scarcity status of some wire mill products. Consumers of number of wire mill products are now believed to have caught up, to considerable degree, on their supply; are able now to place orders for relative nearby delivery, whereas formerly they were buying for shipment many months ahead. There is no material change in lead situation, with supplies tight & demand remaining in excess of metal available.

* * *

Rochester Tel. Corp. took no action on common dividend usually due at this time. John W. Morrison, pres., said it was desire of directors to conserve cash in view of "our extensive construction & telephone conversion." Regular quarterly dividend of $1.12½ was declared on 4½% preferred, payable Apr. 1 to stock of record March 15.

* * *

Telephone companies raised over $1 billion through sale of securities in 1947; accounting for approx. 1/6 of total of $6.2 billion in new corporate securities floated. Including $1 billion raised by telephone companies through sale of securities in 1947, public utility companies accounted for $3,165 million, or more than ½ of all new money issues.

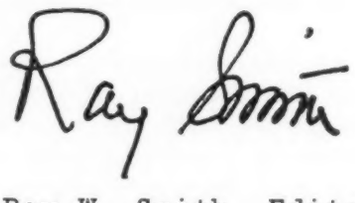
* * *

Highlights: Columbia Utilities Co., Medford, Ore., completed installation of automatic service at Shady Cove, Ore.; is installing automatic equipment at Bonanza & Lorella, Ore.....California - Oregon Tel. Co. converting Newell, Calif., to automatic service.... Chas. E. Thomas appointed counsel of Pennsylvania Public Utility Commission: John A. Walter named secretary....Thad C. Cone, mgr. Lincoln (Neb.) T. & T. Co., Seward, completed 25th year with Lincoln T. & T....W. H. Duncan elected pres. Farmers Mutual Tel. Co., Maitland, Mo....Peoples Tel. Co., Inc. will install automatic service at Center, Ala.

Moore-Liberty Tel. Co., remodeling Enderlin, N. D., office, prior to new swbd. installation....Telefonos de Mexico announced plans for automatic system at Juarez....Bixby (Okla.) Tel. Co. installed 400-line swbd....Harve Weller, retired after 36 years' service with Pike County Tel. Co. and successor company, Hardin, Ill.....Sac County Mutual Tel. Co., completed installation of new common battery swbd. at Odebolt, Ia....Western Light & Tel. Co. expanding facilities near Waterville, Kans....Rural residents near Thunder Hawk & Keldron, S. D. forming company to provide telephone service.

John Spady, area comml. mgr. Lincoln (Neb.) T. & T. Co. announced $1 - million expansion-improvement program for Hastings, Neb....P. J. O'Neil elected pres. Soldiers Grove (Wis.) Farmers Tel. Exchange....Stockholders of Tyler (Minn.) Tel. Co. voted to expand & improve system; planning complete cable replacement program.

Your 1948 TELEPHONE ENGINEER Buyers Directory & Composite Catalog with Handbook will be mailed in separate package late this month. Expanded contents made much larger production job than expected.



Ray W. Smith, Editor

DESIGNED FOR DISTINCTION

SHERRON
ACOUSTIC
STAINLESS STEEL TELEPHONE
BOOTH

STAINLESS STEEL
or
MONEL "35"
plus
GENERAL ELECTRIC
TEXTOLITE
PLASTIC PANELS

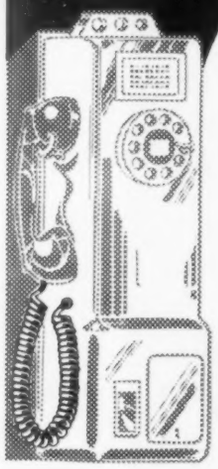
The jewel-like brightness and enduring beauty of Sherron's Stainless Steel or Monel "35" Telephone Booth are now heightened by General Electric TEXTOLITE Plastic Panels. Decorative, scratch-and-shock resistant, TEXTOLITE gives further accent to the easy maintenance and lasting newness of the Sherron Booth. The "noise eliminator" construction of the Sherron Booth literally channels outside sounds into a unique noise-eliminating "cushion." Sherron Acoustic Booths are available not only in Stainless Steel or Monel "35" but also in Furniture Steel.

MORE REASONS WHY THE SHERRON ACOUSTICS STEEL TELEPHONE BOOTH IS TOPS:

- All-metal rigid construction.
- Improved door hinges prevent creaking or sticking. Door operates easily and quietly in stainless steel track.
- Automatic, noiseless door switch controls ceiling light of special design, eliminating current consumption when not in use.
- Linoleum covered steel floor prevents wear on floor of owner's premises.
- Adjustable shelf and instrument backboard.
- Electric ventilating unit of improved type.
- Steel seat of new design.
- High grade baked enamel finishes.

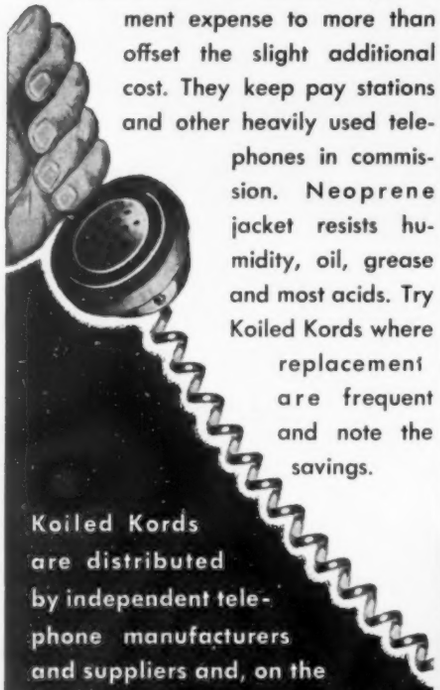
SHERRON METALLIC CORPORATION
1201 FLUSHING AVENUE • BROOKLYN 6 • NEW YORK

KOILED KORDS PAY in PAY STATIONS



NEOPRENE JACKETED TINSEL CORDS CUT MAINTENANCE COSTS!

The longer life and better service provided by sturdy Koiled Kords reduce maintenance and replacement expense to more than offset the slight additional cost. They keep pay stations and other heavily used telephones in commission. Neoprene jacket resists humidity, oil, grease and most acids. Try Koiled Kords where replacement are frequent and note the savings.

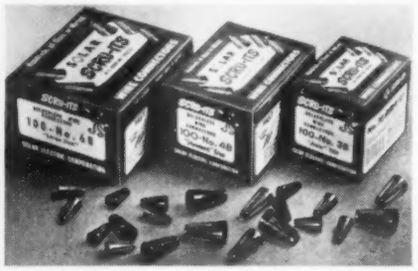


Koiled Kords are distributed by independent telephone manufacturers and suppliers and, on the West Coast, by the Jewell-Summer Co., Los Angeles, Cal.

Koiled Kords
INCORPORATED
BOX K, HAMDEN, CONN.

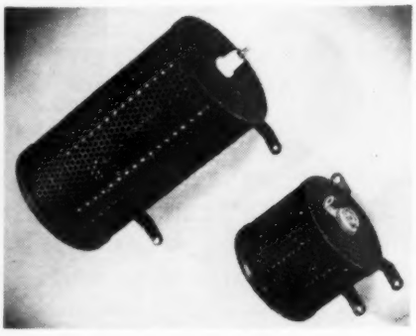
New Products Showcase

For further information on New Products presented in this department, write New Products Editor, Telephone Engineer Publishing Co., 7720 N. Sheridan Road, Chicago 26, Ill. All inquiries will be answered promptly.



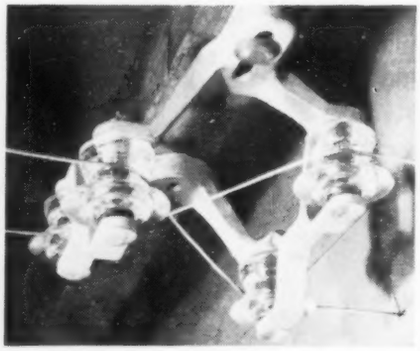
Scru-Its, the tapeless and solderless wire connectors manufactured by Solar Electric Corp., are used for joining all sizes and types of electric wires, either solid or stranded. The manufacturer states they are much faster and easier to use than tape or solder and make a stronger joint.

• • •

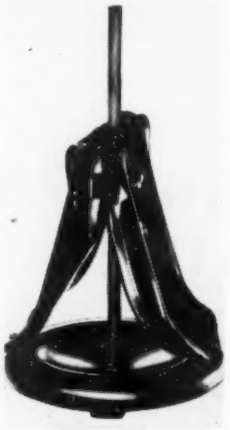


The development of two new series of dummy antennas, Types D-101 and D-251, has been announced by the Ohmite Manufacturing Company. Being composed of wire-wound, vitreous-enameled resistors, the new units are radically different in appearance than the former glass-enclosed units, and have the advantage of greater ruggedness and durability plus high wattage ratings.

• • •



Case point transposition brackets reduce tensioning costs in stringing and restringing wires. Glass insulators roll—preventing binding in tensioning and allowing free movement of the wire.



New, Pieper-Lillard, all-steel, two-piece expanding earth anchor. Base plate serves as member upon which one-piece blades are expanded. When fully spread, shoulders in each wing engage edges of plate—firmly positioning them.

• • •

Metro carbide masonry drills are now offered in a handy kit of six of the most commonly used sizes, (3/16", 1/4", 5/16", 3/8", 1/2" and 5/8") covering a wide range of applications. Sturdy leatherette case durably constructed, protects the drills. Comes complete with operating instructions.

• • •

Outstanding feature of the thermoplastic tubing, and similarly insulated wire, recently developed by William Brand & Co. as shown in the accompanying illustration, is the integrally-extruded contrasting colored striping. By such a unique extrusion process a permanency of codifying identity in circuits and other conductor elements, is imparted which heretofore has been unattainable.

SOMETHING NEW IN AUTOMATIC INTERCOMMUNICATION

It's Federal's

6E PABX

The New Private Automatic Branch Exchange that offers all of these advantages:

- ✓ **SMALL SIZE** — 18 inches square by 8 inches deep. Weighs only 60 pounds.
- ✓ **SIX STATIONS** and two central-office trunks. An additional bridged extension may be added to each station, if desired.
- ✓ **SIMPLE WIRING** — only 2 wires required for connection to each station, plus ground connection.
- ✓ **COMPLETE SECRECY** of all intercommunicating and trunk calls.
- ✓ **CONSULTATION CALLS** to any other station can be made by local-station user while engaged on a trunk call—even with local links in use.
- ✓ **TRUNK TRANSFER** permits any trunk call to be transferred to another local station.
- ✓ **FIVE RESTRICTIONS** can be applied to any station, if required.

WITH FEDERAL'S new 6E PABX, *no* location is too small for completely automatic telephone service. Its small size, light weight and low cost make it applicable to offices, stores, small factories and large residences.

A particularly desirable feature of the 6E PABX is the provision for "consultation" calls. A user engaged on a trunk call can "hold" this call and disconnect himself temporarily, by depressing and releasing the transfer button on his telephone. He may then dial any local station for information or advice, after which the "held" trunk call can be resumed. Also, if desired, he can transfer the trunk call to any other local station.

The equipment permits simultaneous connections for two trunk calls and one local (intercommunicating) call. Outgoing calls can be made from any station, and incoming calls can be answered at any telephone. If desired, partial or complete restriction can be applied to any of the local stations.

SEND FOR THIS NEW BOOKLET

giving complete information on Federal's 6E PABX. Write to Federal, Dept. G749.

THE 6E PABX IS AVAILABLE FOR PROMPT DELIVERY

KEEPING FEDERAL YEARS AHEAD... is IT&T's world-wide research and engineering organization, of which the Federal Telecommunication Laboratories, Nutley, N. J., is a unit.

Federal Telephone and Radio Corporation

100 KINGSLAND ROAD, CLIFTON, NEW JERSEY

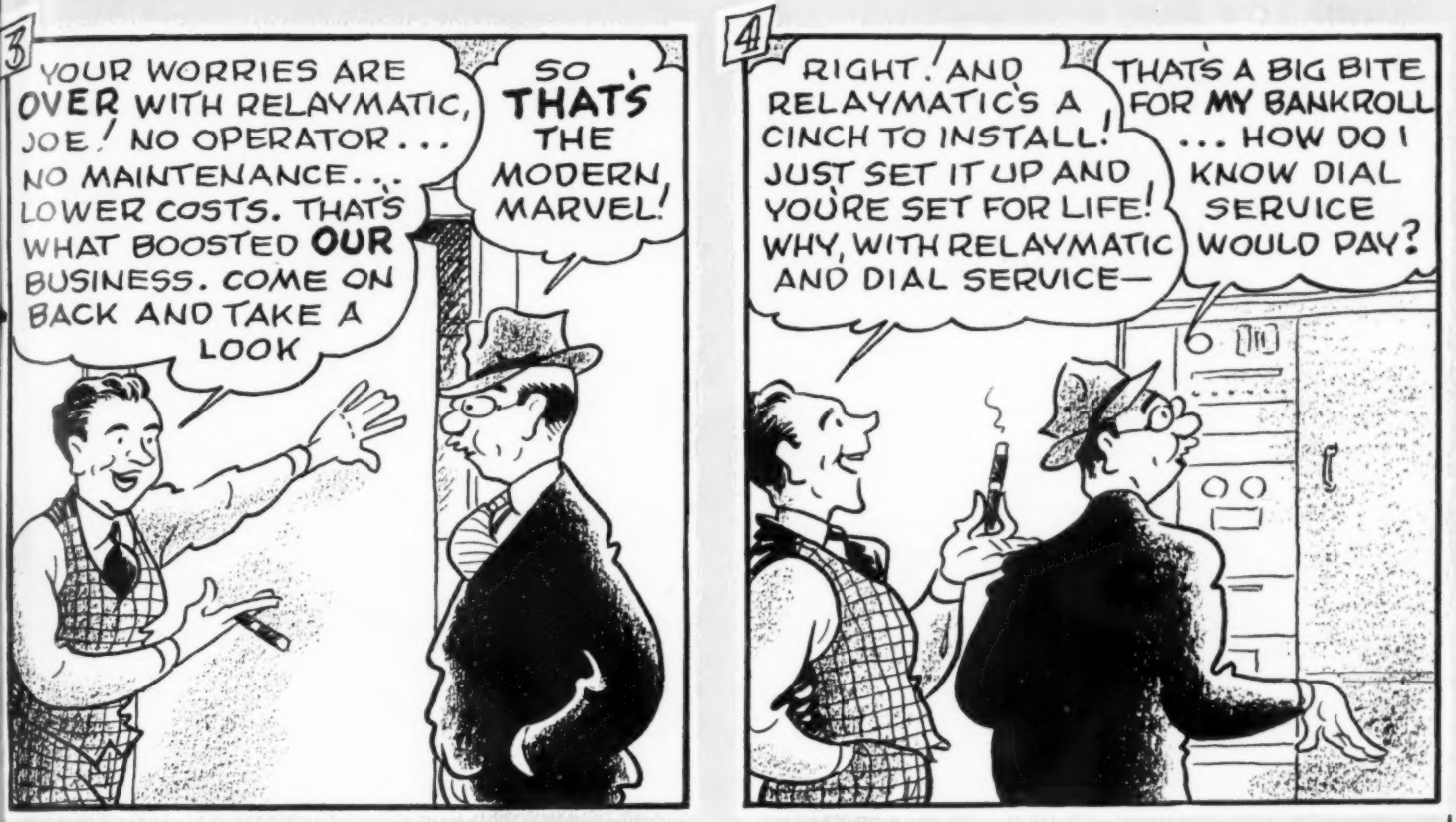
In Canada:—Federal Electric Manufacturing Company, Ltd., Montreal, P. Q.
Export Distributors:—International Standard Electric Corp. 67 Broad St., N. Y.

THIS COULD BE Y

IN A SMALL TELEPHONE CO. OFFICE
1
WHY THE GLOOM, JOE? YOU LOOK LIKE YOU'VE LOST YOUR LAST FRIEND!
I'M SURE GOING TO LOSE SOME FRIENDS IF I RAISE SUBSCRIBER RATES AGAIN. AND YOU OUGHT TO SEE MY COSTS CLIMB!
2
WITH THAT ANTIQUATED SYSTEM OF YOURS, YOU CAN'T EXPECT TO KEEP YOUR HEAD OUT OF WATER! WHY DON'T YOU INSTALL A NEW RELAYMATIC SWITCH BOARD FOR DIAL SERVICE?
LET'S NOT JOKE, JIM. I'VE GOT ENOUGH TO WORRY ABOUT ALREADY
5
BEST INVESTMENT YOU COULD MAKE, JOE! RELAYMATIC GIVES ALL THE MODERN SERVICE, AND IS SURE TO NET YOU NEW SUBSCRIBERS. COSTS LESS TO SERVE 'EM, TOO
THAT'S FINE...BUT JUST HOW DO I PAY FOR ALL THIS?
6
CONTACT KELLOGG, JOE! THEY'LL HELP TO PUT YOU BACK ON THE PROFIT-PATH IN NO TIME
YOU'RE MAKING SENSE, JIM! KELLOGG'S AN OUTFIT THAT UNDERSTANDS THE PROBLEMS OF INDEPENDENT TELEPHONE MEN LIKE US
MILT YOUNGREN

Progressive Independent telephone companies everywhere are turning to Dial Service and the Relaymatic Switchboard. Put yourself in line for extra earnings and lower costs. Contact your Kellogg representative for complete details **today!**

YOUR STORY!


3
YOUR WORRIES ARE OVER WITH RELAYMATIC, JOE! NO OPERATOR... NO MAINTENANCE... LOWER COSTS. THAT'S WHAT BOOSTED OUR BUSINESS. COME ON BACK AND TAKE A LOOK
SO THAT'S THE MODERN MARVEL!
4
RIGHT! AND RELAYMATIC'S A CINCH TO INSTALL! JUST SET IT UP AND YOU'RE SET FOR LIFE! WHY, WITH RELAYMATIC AND DIAL SERVICE—
THAT'S A BIG BITE FOR MY BANKROLL ... HOW DO I KNOW DIAL SERVICE WOULD PAY?

KELLOGG Relaymatic Switchboard

Here's Why Relaymatic Cuts Cost, Boosts Earnings!

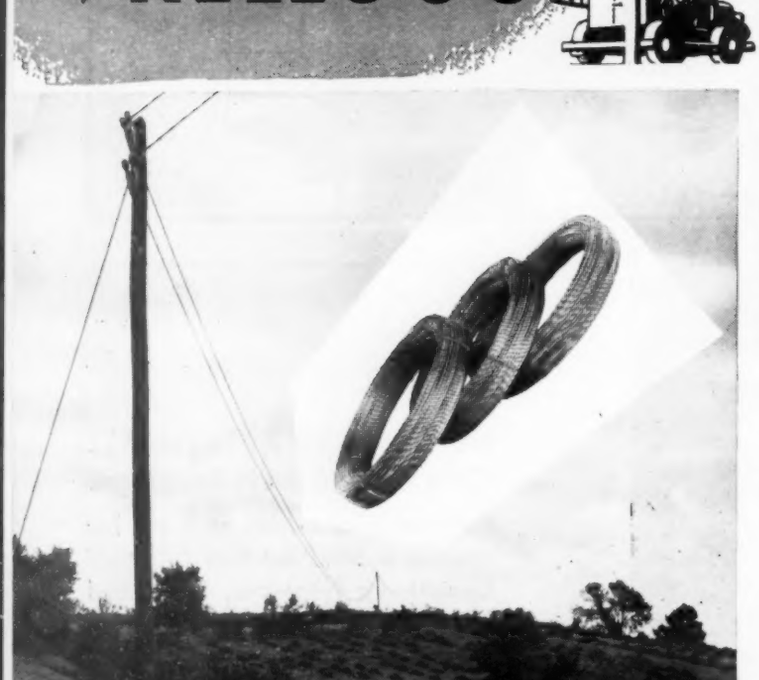
Relaymatic installation costs are low because it takes less time to install! Circuits are fully-wired, tested and connected. All lines are wired to terminal strips to facilitate cabling. And Relaymatic's designed for fast inspection, too! Cuts maintenance costs because it uses ***relays only***—nothing to need adjustment or wear out. Relaymatic boosts revenue because it gives all the improved modern services, and functions dependably under all conditions.

KELLOGG SWITCHBOARD & SUPPLY CO.

6650 SOUTH CICERO AVENUE • CHICAGO 38 • ILLINOIS

The Satisfaction Lasts
When You Buy Products

Recommended and Guaranteed by KELLOGG

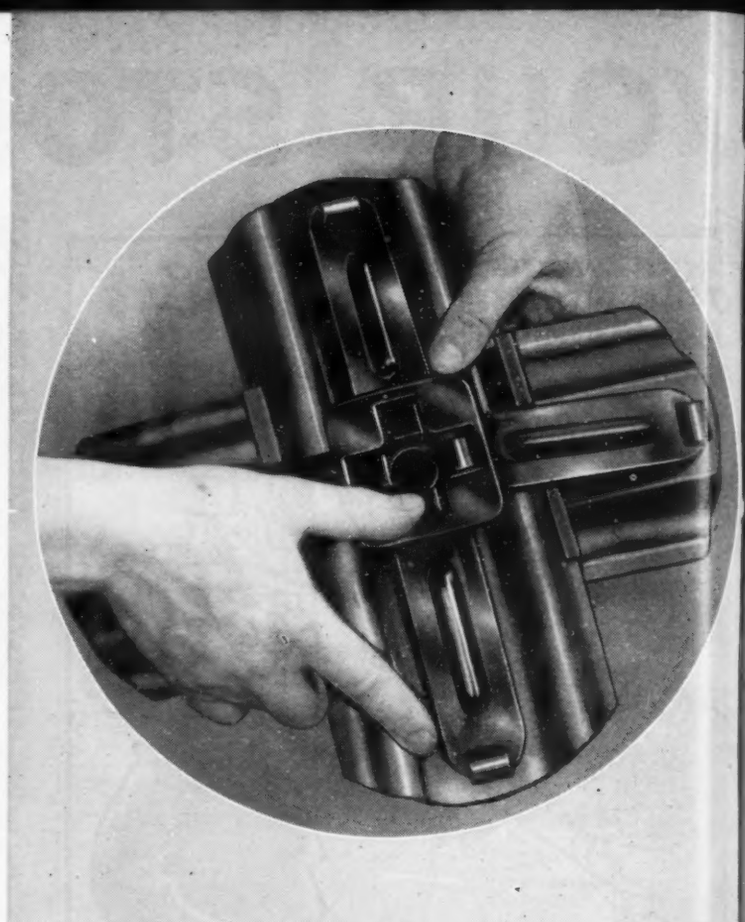


SPANS OF No. 12 B.W.G.– HEAVY LOADING DISTRICT

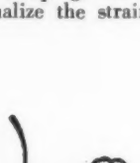
HTL-135 SPANS TO 350 FEET

HTL-85 SPANS TO 225 FEET

Save Two Ways—on line wire replacement and construction by standardizing on INDIANA STEEL AND WIRE CO.'S Crapo HTL-135 and Crapo HTL-85 Line Wire. Because of their high tensile strength, these wires permit long spans, enable you to realize substantial savings in construction and maintenance costs. Galvanized by the famous Crapo Process.

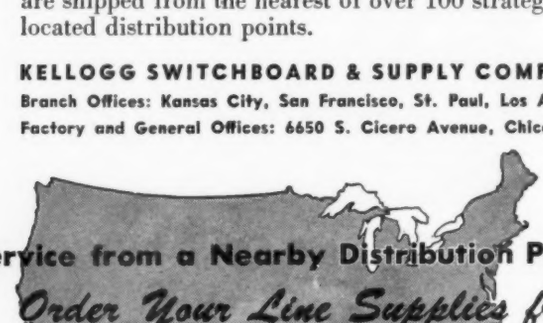


Once They're In—They're In To Stay! The heavy ribbed steel blades of the A. B. CHANCE COMPANY'S all-steel Expanding Anchor dig into solid earth with a minimum of soil disturbance and hold without danger of creeping. The powerful blades expand in opposite directions to equalize the strain. Available in hole diameter sizes from 6″ to 12″.



There's three-way satisfaction when you concentrate purchases of line supply and construction materials at a single, responsible source: (1) The *quality* is right—all products are backed by the famous Kellogg DOUBLE GUARANTEE; (2) The service is right—orders are intelligently handled by experienced people; (3) *Delivery* is right—orders are shipped from the nearest of over 100 strategically located distribution points.

KELLOGG SWITCHBOARD & SUPPLY COMPANY
Branch Offices: Kansas City, San Francisco, St. Paul, Los Angeles
Factory and General Offices: 6650 S. Cicero Avenue, Chicago 38

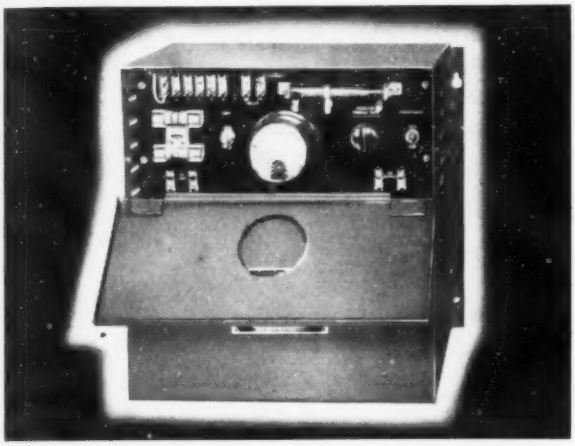


For Service from a Nearby Distribution Point

Order Your Line Supplies from

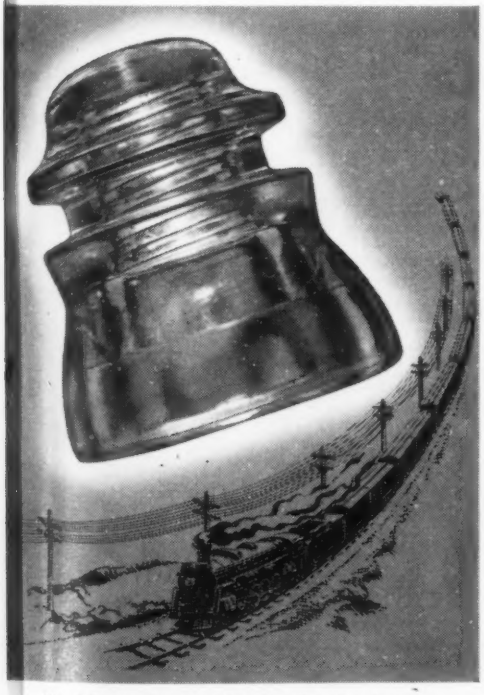
KELLOGG

You Can Reduce Replacements when you use "Eveready," "Columbia," "Gray Label" Telephone Cells. Products of the world's largest dry battery laboratory at NATIONAL CARBON CO., INC., they are famous for sustained voltage, *extra* hours of service life, and uniform high quality.

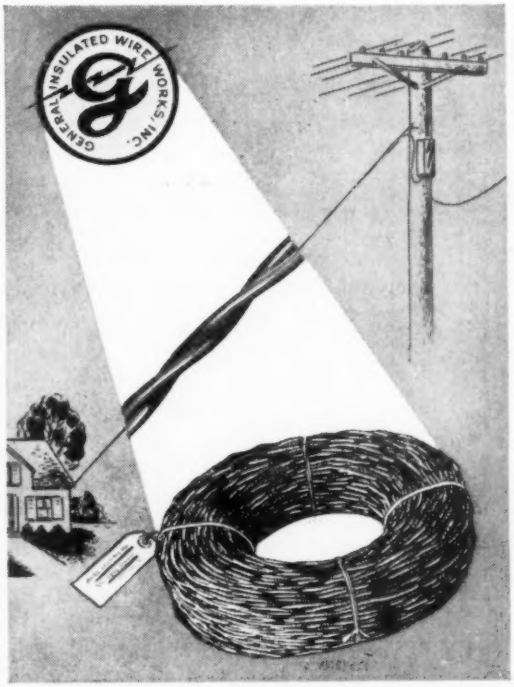


Tip-top Shape! Automatic battery charging ends troubles caused by over- and under-charging. Keeps storage batteries in tip-top shape—fully charged at all times. RectiChargeR automatic charging prolongs battery life. That's why this RAYTHEON MFG. CO. unit is so popular everywhere!

More Lines, More Power. For the special needs of the Telephone Industry, in these days of service expansion GOULD provides the famous Floté Battery in glass (illustrated), and in rubber and Vitrabloc jars. This different battery makes a major advance in design. It eliminates low cells in full float service, reduces maintenance costs, increases battery life.



Meet Every Service Need. That's why so many telephone companies use Armstrong's Glass Insulators. Made by ARMSTRONG CORK COMPANY, their outstanding features include crystal clarity of glass, accurate gauging, unusual resistance to weather changes.



Increase Drop Wire Life 30% by using GENERAL INSULATED WIRE WORKS Bronze Drop Wire. This high-conductivity wire is drawn of solid non-corrosive bronze and covered with Neoprene, the insulation that can take punishment. Flexible—easily handled.

No More High Resistance Joints—and inter mittent open-and-closed circuits, when you us KESTER SOLDER CO.'S Rosin Core Solder It seals joints permanently, protects agains service troubles. Used by Kellogg and othe manufacturers of communication equipmen

ALL the strength and durability inherent in steel are combined—with definite economies—in *Crapo* Galvanized Steel Strand. Heavy, ductile, tightly-bonded zinc coatings, applied by the famous *Crapo* Galvanizing Process, provide lasting protection against corrosion.

Ask the distributor of *Crapo* Galvanized Products near you or write direct for further information!

INDIANA STEEL & WIRE CO.
MUNCIE, INDIANA

PHENOLIC RECEIVER SHELLS and CAPS

These shells will fit most slip type of receivers. The threads are accurately cut. Good quality throughout. In lots of 25, 56c each.

See catalog for other prices.

SUTTLE EQUIPMENT CO.
LAWRENCEVILLE, ILLINOIS

DEPEND ON
SUTTLE

★ Free Literature Department ★

All literature described in this department may be obtained by filling out the handy blank at the bottom of this page and forwarding to Telephone Engineer Publications.

Carrier Telephone: Lenkurt Type 32 Carrier Telephone Systems are described in Bulletin 62A, just published. The 68-page bulletin covers frequency allocations for carrier telephone, and continues with descriptions of the terminals, repeaters, pilot regulators, and auxiliary units which make up the system. Auxiliary units discussed include: Voice-Frequency terminating equipment, ringdown signaling gear, carrier-frequency dialing facilities, carrier-transfer equipment, voice-frequency repeater balancing devices, bridged-station filters, auto transformers, repeating coils, relay racks, test units, and power supplies. Request F L 183.

* * *

Generators: Operation of new "Packaged Generators" described in new bulletin. "Packaged Generators", developed by Electric Machinery Manufacturing Co., for use in engine-generator sets, is compact, factory assembled unit. Built-in automatic voltage regulating circuit has no moving parts, requires no maintenance. Request F L 184.

* * *

Magnetic Tape Recording: New booklet written by A. C. Shaney, chief engineer of the Amplifier Corp. of America, New York City, discusses history of magnetic tape recording; advantages of magnetic tape recording, the recording medium; the recording, playback and erasing processes, and the tape handling mechanism. In addition, there is included a classified listing of possible applications of magnetic tape recording for layman, technician, and engineer in various industrial, commercial, and institutional fields. Request F L 185.

* * *

Point-To-Point Equipment: The new point-to-point radio communication equipment is described in a new booklet of the Westinghouse Electric Corporation. Typical applications for this equipment are: ship-to-shore; between airports; and industrial communication systems such as mining, lumbering and construction.

This 8-page booklet shows the adaptability of the Westinghouse type MV equipment to cover all radio communication demands by offering all these types of service from one transmitter: on-off telegraphy, frequency shift keying, facsimile, MCW and radio-telephony. Request F L 186.

* * *

"Port-O-Reel": Four page bulletin describes new "Port-O-Reel" cord saver extension which provides any length of cord up to 150 feet when, where and how you need it. Request F L 187.

* * *

Recorder Catalog: An illustrated 8-page, 8½ x 11 catalog has recently been published by the Magnephone Division of Amplifier Corp. of America, featuring and describing their new series of high-fidelity magnetic tape recorders. Request F L 188.

Date.....

TELEPHONE ENGINEER PUBLISHING CORP.
7720 North Sheridan Road,
Chicago 26, Illinois.

Please forward the following literature described in the Free Literature Department of the March, 1948 issue of TELEPHONE ENGINEER AND MANAGEMENT: (Check information desired)

FL 183..... FL 184..... FL 185..... FL 186.....
FL 187.....FL 188.....

Name: ..... **Title:** .....

Company: .....

Street Address: .....

Town: ..... **Zone:** .....**State:** .....

THIS STRAND DOESN'T SCREAM "OUCH!"

Here's a strand that's easy to handle—one you can bend without maiming it for life. Bethlehem strand is never cranky or stubborn; doesn't suffer tortures when you loop it.

Neither does the coating. In Bethlehem strand, the wires are protected by rust-resistant bethanized "armor"—an outer thickness of highly-pure zinc that is applied electrolytically. This process, exclusive with Bethlehem, is more than just a method of bonding zinc to wire. It creates a jacket so ductile that even the cruelest bending doesn't disturb it.

Another feature is uniform coating-thickness. No isolated thin spots; no "ripples." Whether you pick an A, B, or C coating-weight,* the wires of your Bethlehem strand are protected fully and evenly, all the way around.

Why not let us tell you the whole story? Glad to, any time. Simply call in the nearest Bethlehem representative.

* A—equivalent to extra-galvanized; B—twice the weight of A; C—three times the weight of A.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

Export Distributor: Bethlehem Steel Export Corporation

BETHANIZED STRAND

HIGH WIDE and then some!

We've extended service by leaps and bounds to catch up with the nation's growing telephone needs. But the job isn't finished yet.

The advertisement on the opposite page tells about some of the progress made—and the work that still lies ahead. Appearing in national magazines during March, it reminds the public that the telephone industry is hard at work to provide better service for more people everywhere.

AN ADVERTISEMENT OF THE BELL TELEPHONE SYSTEM

A LOT OF GROWING TO DO

This is a big country and to furnish nation-wide telephone service, the Bell System has had to be big for a long time. But in the last few years it hasn't been nearly big enough.

Even though we've broken all records and added more than 6,000,000 new telephones in the past two years, there are still about a million orders for service that we haven't been able to fill because of lack of equipment, switchboards, cable and buildings. Many more Long Distance circuits also are needed.

It will take time and a lot of money to make the Bell System big enough for the nation's needs but we're on our way—in a big way—to giving you more and better service than ever before.

BELL TELEPHONE SYSTEM

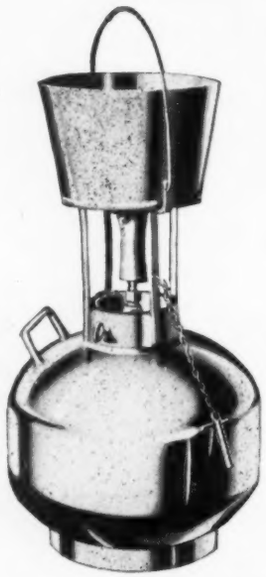
SAVE TIME and MONEY

. . . . do a better job SAFER

with

MUTUAL

LIQUID GAS EQUIPMENT



NO. 2 FURNACE

is a compact, light-weight unit that saves times and money on the job. It will melt 8" pot of lead in twelve minutes. Its many features include: non-warping head, adjustable orifice and tube, removable handle and shield. Shield will accommodate 8" lead pot. Either propane or butane may be used. Cylinders are built to I.C.C. 4B 240 code; 250 lb. w.p.; fitted with vapor and filler valves, 375 lb. pressure relief valve and liquid level valve. Furnace develops approximately 2350 degrees.

With most cities and towns now having butane or propane gas available equipment designed for it is rapidly supplanting that using slower inefficient fuels.

The Mutual Liquid Gas Equipment Company was one of the first manufacturers to start development of liquid gas furnaces and torches. They have spent over ten years building, testing and proving a line of equipment that is meeting with popular reception among utility companies and telephone men in particular all over the country.

The simplicity and efficiency of Mutual Furnaces and Torches has been brought about by men who know from direct contact the needs and problems of telephone men. Mutual's engineers will be pleased to help you with any unusual problems you may be experiencing in work where furnaces or torches are used.

MUTUAL LIQUID GAS TORCHES

No. 4 Blow Torch

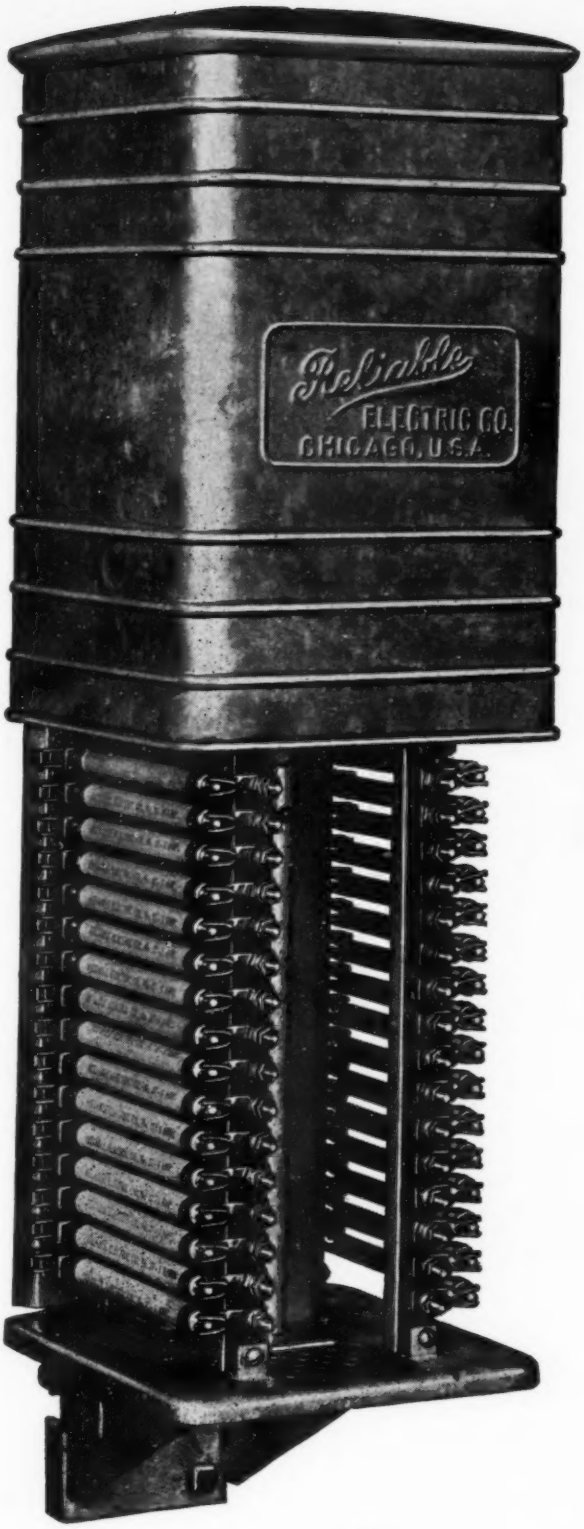
Telephone men find Mutual's No. 4 Blow Torch an ideal tool for the following uses: Soldering joints in line and bridle wire at junction poles, etc.; For minor soldering operations on subscribers' premises; for field use in connection with instrument repairs on rural telephones; for heating threaded crossarm bolts, guy clamps, which are so badly corroded that nuts cannot be readily removed; for smoothing up wiped cable sleeves or removing solder from sleeves and many other such operations. Other Mutual Torches are available that will save time and labor on heavier brazing jobs such as repairs to company vehicles, digging tools, etc.

Write today for Mutual's Illustrated Catalog

Order from your jobber or write us direct

Mutual LIQUID GAS EQUIPMENT CO., Inc.

3600 WEST IMPERIAL HIGHWAY, INGLEWOOD, CALIF.



re-li′able, (re-li′a-bl) *adj.*
Suitable to be relied on, trustworthy.
...Webster

BUILD FOR THE FUTURE

Specify Reliable
B-27
CABLE TERMINAL

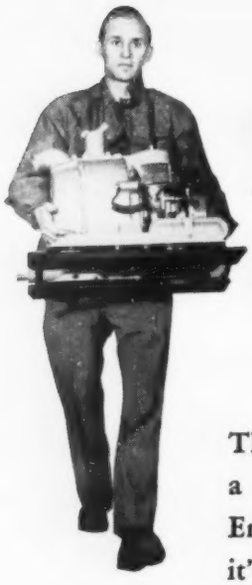
Your linemen know!

BECAUSE...

Their experience has *proven* that the B-27 Cable Terminal far exceeds field engineering requirements. Easy accessibility simplifies and speeds installation, inspection and maintenance. Savings in time and labor alone put the B-27 in a class by itself. Its dependable, long-lived service has set a new standard of operation throughout the industry.

Reliable
ELECTRIC COMPANY
3145 CARROLL AVENUE • CHICAGO 12, ILLINOIS.

OVER 40 YEARS' *Service* TO THE TELEPHONE INDUSTRY



The One Carryable Pump for all jobs

There's one thing about a Homelite Gasoline-Engine-Driven Pump... it's small enough to get to a job and big enough to *do* the job. But that's not all... not by far. A Homelite... *and only a Homelite* ... has 9 Big Features that make it the best pump for all jobs... your jobs.

The Best Pump for All Jobs is the Pump with All These Features		
1	CARRYABILITY	√
2	FAST SELF-PRIMING	√
3	AUTOMATIC SEEPAGE CONTROL	√
4	HIGH 28-FOOT SUCTION LIFT	√
5	NON-CLOGGING DESIGN	√
6	MAINTAINED RATED CAPACITY	√
7	DISCHARGE PRESSURE	√
8	DEPENDABILITY	√
9	SIMPLE DESIGN AND OPERATION	√

For Pumping Out Manholes

A Homelite has *fast* priming... prevents delays. It is guaranteed for 28-foot suction lifts... good for deep manholes. And it handles seepage quickly to maintain dry footing for workmen.

See for yourself

Write today for our new illustrated bulletin No. L-503 that tells the *complete* story and shows how you can get faster, better pumping with Homelite *Carryable* Pumps.

HOMELITE
CORPORATION
1203 RIVERDALE AVENUE, PORT CHESTER, NEW YORK

MANUFACTURERS OF HOMELITE *CARRYABLE* PUMPS · GENERATORS · BLOWERS · CHAIN SAWS

EDITORIAL

What If Tolls Should Slump?

THE Independent telephone industry has become, during the past 10 years or so, heavily dependent upon toll revenue for its net earnings.

Statistics published by United States Independent Telephone Association, covering a period beginning with the year 1936 and to and including 1946, show graphically how the relationship between exchange revenues and toll revenues has changed during those eleven years. The figures we use here apply to the Class A and B Independent telephone companies, of which there were 265 in 1946, operating some 3,200,000 owned telephones at the end of that year.

Gross operating revenues of Class A and B Independent companies together were an average of $10.71 higher per station for 1946 than for 1936. But $9.16 per station of this $10.71 increase was for net toll revenue; only $1.55 of the increase came from exchange and miscellaneous revenue.

Net toll revenues averaged $8.40 per station in 1936, which was about the high of any year preceding. For 1946 net tolls averaged the unprecedented high of $17.56 per station. (The average for 1947, for which figures are not yet available, was probably as high or higher, even after losses of toll revenue caused by the telephone strike.)

The operating expenses of these same companies increased $9.83 per station during the same eleven year period, including accruals for depreciation (at 93c per station less for 1946 than for 1936), but not including taxes.

All of this has brought about a very important change in net earnings of telephone companies—one which would be alarming if there were any indication of a slump in toll revenues.

For the year 1936, operating expenses of these companies (including depreciation but not taxes) were $5.67 per station *less* than exchange and miscellaneous operating revenues alone —that is, without any toll revenue at all included. But in 1946, comparable operating expenses were $7.28 per station *more* than exchange and miscellaneous revenues, with no toll revenue included.

The significance of this situation is clear, and illustrates the present dependence of the industry on toll revenue. In 1936 the companies would at least theoretically have had something left over, after expense before taxes, if they had had no toll revenue at all. But in 1946 they had to have $7.28 per station toll revenue (almost as much as total toll revenue per station in 1936) simply to break even on expense.

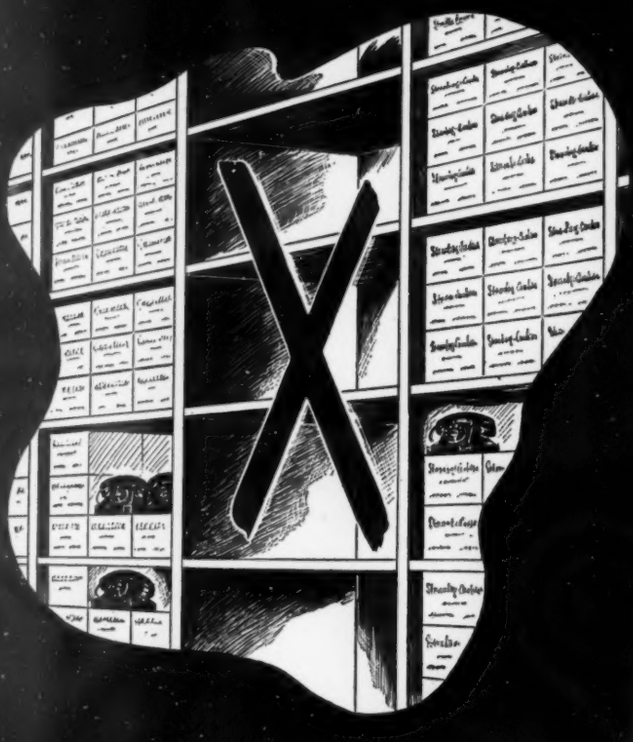
For many years the net toll revenue of Class A and B Independent companies averaged about 22% of their gross revenues. Now these companies are dependent on toll revenues for near 38% of their gross.

The question naturally arises as to what the earnings situation of a number of companies would be if there should be a slump in toll revenues.

No one anticipates, of course, that toll revenue will drop to its old levels of around $8 or so per station. But toll revenue could conceivably drop 10%, or 20%, or—under adverse economic conditions—even more. Under present conditions of basic operating expenses and other costs, any drop of consequence in toll revenues could be a serious thing for some companies.

The answer is, we think, that exchange revenue must be brought up to the point where it carries its fair share of the load.

(The foregoing editorial, although copyrighted, may be reproduced in whole or in part, without charge, provided credit is given this publication and a copy of such reproduction is filed with this publication. This legend need not appear on the reproduction.)



"X" marks the spotwh by switching toST

AS MAINTENANCE MEN know well, it is the *base* of any telephone which takes the most abuse. In many an operating company's inventory, this means carrying in stock bases and instruments for both wall and desk phones, and desk set boxes—six different stock items. With Stromberg-Carlson telephones (Central Energy or Magneto), the same base is used for either wall or desk type—effecting both a financial and a physical inventory saving that we estimate averages 12%.

STROMBERG-CARLSON No. 1243 DESK SET TELEPHONE

Tested to stand up under *much more abuse* than any ordinary phone will ever receive. It's been dropped, banged, dunked in water—and has always come up smiling! The design is modern, functional and convenient, with a high-lustre satiny finish. Priced, less dial, only $18.70, f.o.b. Rochester, N. Y. Contact your nearest factory representative.

STROMBERG-CARLSON

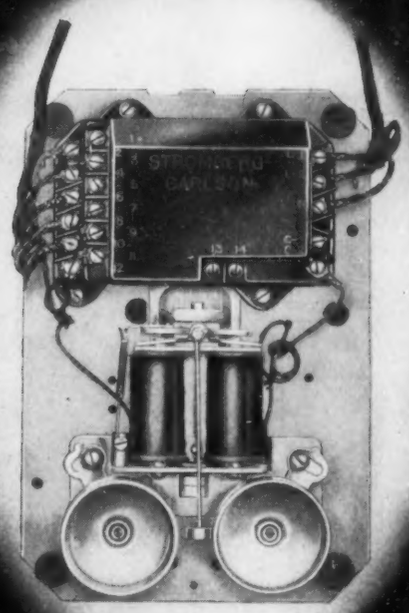
Factory, General Offices: Rochester 3, N. Y.
Branch Offices: Atlanta 3, Chicago 6, Kansas City 8, San Francisco 3. In Canada: Stromberg-Carlson Co. Ltd., Toronto

STROMBERG Telephone CARLSON

TELEPHONES, SWITCHBOARDS • SOUND EQUIPMENT, INDUSTRIAL AND

otwhere inventory was Reduced 12%–

to STROMBERG-CARLSON TELEPHONES



STROMBERG-CARLSON No. 1250 WALL TELEPHONE

Gives the same convenience as a desk set, because the subscriber may sit down to talk. Ideal for stores, hotel rooms, kitchens, garages and many other places. Same modern design as the No. 1243. Rubber feet set instrument away from the wall to allow dispersion of ringing sound. Priced, less dial, only $18.70, f.o.b. Rochester, N. Y.

BASE FOR EITHER No. 1243 OR No. 1250

This single base assembly is used in the No. 1243 Desk Set, the No. 1250 Wall Telephone, and the No. 1260 Desk Set Box. Conversion from one type to another is a matter of minutes. Inventory saving should average at least 12% of stock.

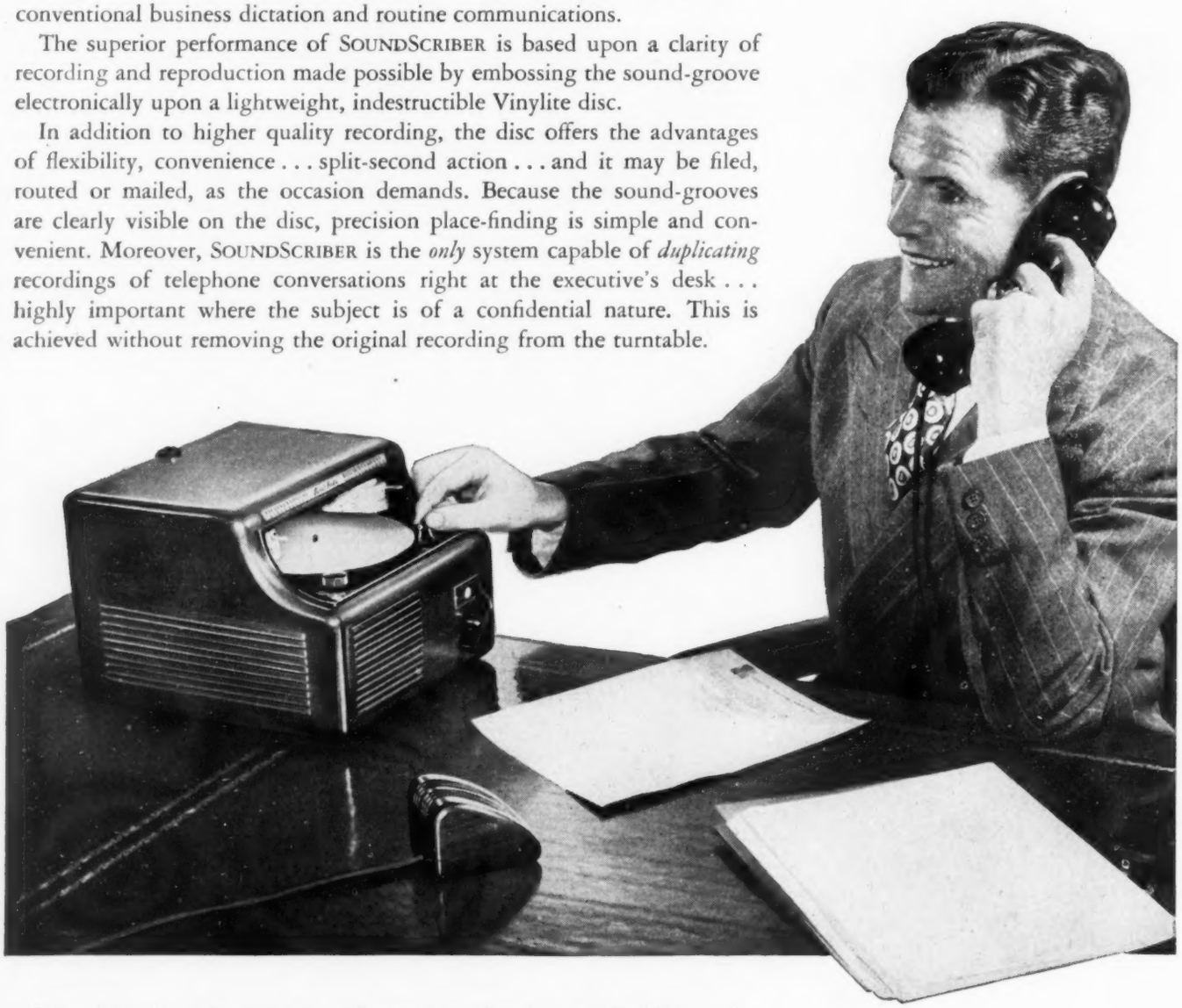
TRIAL AND INTERCOMMUNICATION SYSTEMS • RADIOS, RADIO-PHONOGRAPHS, FM AND TELEVISION

SoundScriber telephone recording . . . a vital link in modern business communications!

The benefits of this new, important use for the telephone are already being turned to advantage by tens of thousands of business executives now using SOUNDSCRIBER for streamlining their business methods. For SOUNDSCRIBER records telephone conversations as easily and effectively as it deals with conventional business dictation and routine communications.

The superior performance of SOUNDSCRIBER is based upon a clarity of recording and reproduction made possible by embossing the sound-groove electronically upon a lightweight, indestructible Vinylite disc.

In addition to higher quality recording, the disc offers the advantages of flexibility, convenience . . . split-second action . . . and it may be filed, routed or mailed, as the occasion demands. Because the sound-grooves are clearly visible on the disc, precision place-finding is simple and convenient. Moreover, SOUNDSCRIBER is the *only* system capable of *duplicating* recordings of telephone conversations right at the executive's desk . . . highly important where the subject is of a confidential nature. This is achieved without removing the original recording from the turntable.



Here then, is an instrument and a system already proved efficient, dependable and convenient. SOUNDSCRIBER *has met the test of experience.* Its suitability as a *complete* system for business communications is proved by performance. It is ready . . . *right now* . . . to serve the needs of telephone subscribers; to fulfill the exacting performance-demands of Telephone Companies . . . just as efficiently as it is serving the demands of the nation's business today.

SOUNDSCRIBER
Trade Mark
ELECTRONIC DICTATING AND RECORDING EQUIPMENT

Product of THE SOUNDSCRIBER CORPORATION
New Haven, Connecticut

NEWS BRIEFS

Bricelyn, Minn., Company Plans Improvement Program

The Bricelyn (Minn.) Telephone Company has announced plans to improve service during 1948. The company's tentative plans for 1948 call for an expenditure estimated at from $6,000 to $10,000. Improvements include a new switchboard, extension and enlargement of present cable plant, and repair and replacement of the poles, wires and other equipment.

◆

John Slezak Named Illinois Bell Director

Directors of the Illinois Bell Telephone Company recently elected two additional directors—Hughston M. McBain, president of Marshall Field & Co., and Col. John Slezak, president of the Turner Brass Works, Sycamore, Illinois, former head of the Chicago ordnance district.

◆

United Telephone Company Files Securities Certificate

The Pennsylvania Public Utility Commission has registered securities certificate of The United Telephone Company of Pennsylvania covering issuance of $500,000 principal amount of First Mortgage Bonds Series A, 3½% due September 1, 1965.

Cash proceeds to the extent of $11,740 from the sale of the $500,000 principal amount of 3½% bonds are to be used for additions and betterments to telephone plant.

◆

Lincoln (Neb.) T.&T. Co. Offers Mobile Service In Lincoln

Mobile telephone service is now available in Lincoln, Nebraska, the Lincoln Telephone & Telegraph Company announced recently. The service will be available for vehicles operating in Lincoln and outside to a distance of 15 to 20 miles.

K. B. Cary, the company's district commercial manager, said the service is in addition to highway mobile telephone service available since August, 1946. The operating principle of the two systems is similar, he said. Each vehicle is equipped with radio transmitter and receiver, and fixed radio transmitters and receivers are located at points of vantage over the city.

Mr. Cary said that at present there are five radio-telephone subscribers in Lincoln and ten radio equipped vehicles in operation.

◆

R. B. WILKINSON became treasurer of the Graybar Electric Co., Inc., effective March 1 when E. W. Shepard, who has been Graybar's treasurer since 1926, retired on a service pension.

Pennsylvania Governor Announces Utility Commission Appointments

Pennsylvania's Governor Duff recently announced the appointments of Charles E. Thomas as counsel and John A. Walter as secretary of the Pennsylvania Public Utility Commission.

Mr. Thomas, who succeeded the late William E. Rutter, is a graduate of Grove City College and the University of Michigan Law School. He has been with the commission since 1941, except for nearly four years in the Navy from which he was released from active duty with the rank of Lt. Commander. In June, 1947 he was appointed assistant chief counsel.

Mr. Walter succeeds Robertson Cameron who resigned. Mr. Walter is a graduate of Lebanon Valley College and joined the commission staff in 1938, serving in various capacities in the secretary's office, including assistant secretary and acting secretary.

◆

R. A. Smith Named Pennsylvania Assoc. Director

Of the eleven directors elected at district meetings of Pennsylvania Independent Telephone Association, R. A. Smith, vice-president of the Blue Mountain, Wisconsin & Southern Telephone Companies is the only new member.

Mr. Smith started his telephone career early, having been born into a telephone family, as his father had been manager of the company at Cadiz, Ohio. He went to Pennsylvania in the mid 30's as manager of the Wisconsin Telephone & Telegraph Company, at Elizabethville, where he remained until 1938 when he was promoted to manager of the Blue Mountain Telephone & Telegraph Company, Bangor. Mr. Smith now is vice-president of the three companies of the Pennsylvania Community properties of the Gary group.

◆

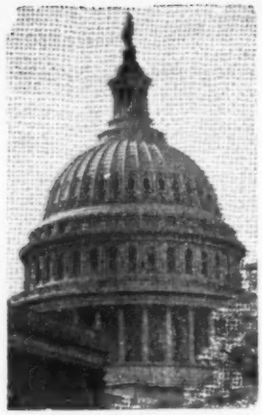
Telefonos de Mexico Announces Improvements

Equipment for an automatic telephone system in Juarez has been ordered by Telefonos de Mexico, which also plans an expansion program to include a new building and a considerable increase in the number of telephones.

Empresa de Telefonos, which formerly operated in Juarez, was bought recently by a company headed by Axel Wenner Gren, and renamed Telefonos de Mexico.

WASHINGTON

Bureau REPORTS



BY ROLAND DAVIES and FRED HENCK

Election Year

ONE OF the strangest examples of election year politics may well result in communications service users continuing to pay whopping excise taxes on their telephone and telegraph bills for at least another year.

If anything besides the sanctity of home and motherhood ever had unanimous approval, repeal or reduction of communications excises qualifies. The mixture of supporters of cutting the levies to the bone or knocking them out altogether includes a cross-section of almost every variety of business, labor, and political leader.

Congressmen on both sides of the aisle have urged that the communications levies be given a long look, certain that close inspection of their disadvantages will result in immediate reduction or repeal. Labor leaders of every stripe are behind the idea. A bipartisan group of state governors has indorsed it. Various business groups have come out against the taxes. The National Association of Railroad and Utilities Commissioners has repeatedly urged that the excises be reduced, if not eliminated altogether.

The most recent endorsement has come from the sizeable National League of Wholesale Fresh Fruit and Vegetable Distributors, which came up with something of a new approach to the matter. The League's announcement, besides revealing that every distributor not only would be urged to support repeal of the levy but would be asked to seek the support of his customers, said flatly that the organization would employ the only effective instrument to effect repeal—"consolidation" of voting strength." It added, "This will be made obvious in sizeable proportions in an election year, and we expect to achieve our objective of removing an inequity from business and an obstacle to lower prices for the consumer."

With that kind of support—and with even the Treasury Department, traditional opponent of tax cuts of any description, tacitly admitting that the luxury level excises imposed on communications during the war to discourage use of facilities long since have served their purpose—a man from Mars probably never could understand why, in our democracy, the excises aren't promptly knocked out.

The situation, of course, is not that simple. One of the biggest guns in the Republican campaign arsenal will be income tax cuts. Unfortunately, most voters are far more directly concerned with their income tax problems than they are with communications excises. The GOP must balance expected revenues, government spending, debt reduction, and income tax slashes, a difficult proposition which squeezed communications excise reduction out of the picture last year and may well do it again.

Another difficulty is the time element. By the time the income tax situation is ironed out, and the size of the coming fiscal year's spending budget, including European aid, becomes apparent, Congress will be anxious to adjourn and get on with the main business at hand, the national political conventions and the election campaign.

House Ways and Means Committee Chairman Harold Knutson, from whose group the tax revisions must come, has not held out much hope for the telephone industry. He has not made any statements on that subject specifically, but he has announced that the forthcoming tax revision measure, on which his Committee has begun work, will be only a promissory note on a later full scale overhaul, and will not contain "anything controversial."

While the communications excises are not controversial per se, and present communications levies are far and away the most onerous of excises, considering the essentiality of the service and the high tax rate, nonetheless any reduction would bring a pilgrimage of representatives of motion picture theaters, furriers, and cosmetic companies seeking cuts in their excises.

Recorders Still Difficult Problem for FCC

ALTHOUGH the FCC probably thought it was finished with the question of telephone recorders when it issued its "final" order in the matter, it appears that the Commission

The Future Looked Bright In 1916

NO ONE CAN tell how far away are the limits of the telephone art. I am certain that they are not to be found here upon the earth, for I firmly believe that some day we will build up a world telephone system, making necessary to all peoples the use of a common language or a common understanding of languages which will join all the people of the earth into one brotherhood. I believe that the time will come when the historic bell which now rests in Independence Hall will again be sounded, and that by means of the telephone art, which to-day has received such distinguished recognition at your hands, it will proclaim liberty once more, but this time throughout the whole world, unto all the inhabitants thereof. And, when this world is ready for the message, I believe the telephone art will provide the means for transmitting to all mankind a great voice saying, "*Peace on earth, good-will toward men.*"—ANONYMOUS, AUGUST, 1916.

still has some decisions to make on the subject and some further problems to consider.

One indication of the still pending problems is the fact that the FCC has again postponed the effective date of the order, which will permit the use of telephone recorders if a tone warning signal is employed with them. The Commission has set the effective date up to April 1, but no doubt further postponements will result because the Western Electric Co. and Independent manufacturers are said to be unready as yet to turn out the necessary equipment in large quantities. In fact, Western Electric has only reached the stage where a few pre-production models of the tone warning signal are being completed, it has informed the Commission.

Several Problems To Be Settled

MEANWHILE, the FCC has several unresolved problems to settle. One has been posed by the telephone companies in asking that the "final" order be revised to require the telephone companies to be responsible for installation and maintenance of the warning-connector unit. Only in this way, the companies feel, can they protect their plant.

But at the same time the recorder manufacturers, who throughout the long controversy have opposed virtually every recommendation or proposal by the FCC or the telephone companies, have filed a stream of oppositions, briefs, and petitions of various kinds to be acted upon. Most recent was a blast by the SoundScriber Corp. against the Bell System tariff proposal of $3 monthly for the warning-connector unit, and a Bell plan to facilitate sales demonstrations of the recorders—a long-standing concern of the manufacturers—by providing portable tone warning devices to salesmen.

SoundScriber said it would produce independent cost analysis testimony, when it has been given a model of the Bell System device, to show that the tariff should not be over $1.50 monthly . At the same time, it contended that the Bell System still has not come forward with a "reasonable" plan for arranging sales demonstrations.

Rates, Wages Must Find Level

WITH THE inflation spiral reaching perhaps a critical stage, the continuing efforts to find a postwar level for rates and wages in the telephone industry has been pointed up by the recent release of 1947 financial reports for the A. T. & T. and the Bell System companies. The reports of those companies, receive wider circulation in general than those of Independent companies.

Virtually without exception, the Bell companies recorded net income last year in the vicinty of the worst years of the depression, and fell below what is regarded as a proper return to attract new investment capital. In many cases, this was true despite institution of rate increases, with the net for the period after institution of the boosts still below a fair return on an annual basis.

Unions See Little Reason For Optimism

MEANWHILE, the telephone employee unions have indicated that they see little reason for optimism in the general price picture, even after the commodity market price breaks, and they are going ahead with the plans to obtain sizeable wage increases in this year's bargaining.

Obviously, a company doing little more than breaking even now cannot pay higher wages without either going in the red or obtaining more revenues for its product—telephone service. This poses a particularly serious problem for those companies which have obtained postwar rate increases already—they simply cannot keep coming back to regulatory commissions for rate hikes, but they also cannot be expected to operate at a deficit. For those which have not sought increases, of course, a wage boost probably will bring to a head the postwar $64 question.

The entire economy, if we are permitted a few more years of peace, undoubtedly will level off at a point well over that of 1939, but it should be stable for a time at that point. There are some encouraging signs that plateau may not be too far in the future. If telephone wages are in relationship to the general price structure, and regulatory commissions permit rates reflecting postwar economic facts of life, then the telephone-using public, the workers, and the owners of the companies all will have a stake in a going concern.—THE END

Are Your Rules Flexible?

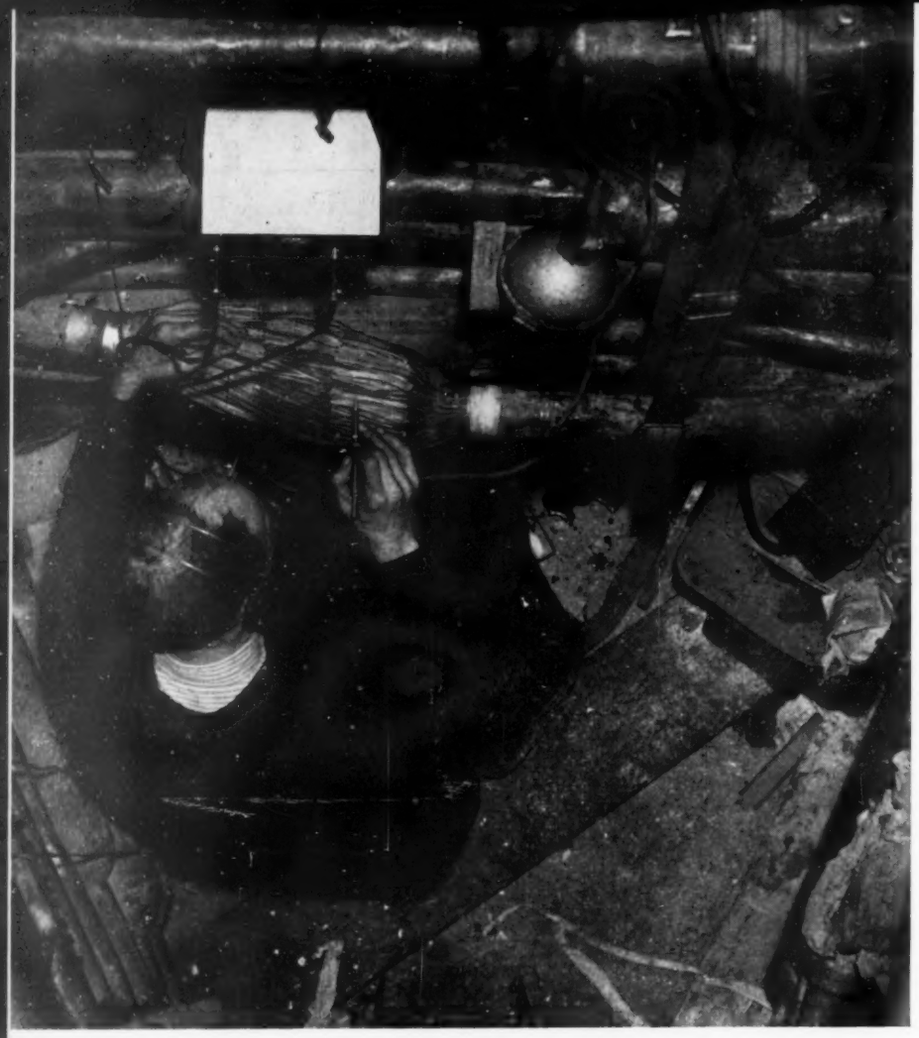
THERE IS NO better way to get the public into a bad state of mind than for a utility company to have a "do or die" Rock of Gibralter attitude regarding their established rules. Rules are essential in any well organized business, particularly one which deals with the public, but rules should have some flexibility. They often need occasional "bending" to fit unusual situations. The judgment of those administering the rules should always prevail over the rule itself when an established rule runs up against an irate subscriber or unusual situation.

That there may be some occasional need for a more liberal interpretation of telephone company rules is shown by the fact that the secretary of the Public Service Commission of Wisconsin in an address before a group on September 25, used a telephone company situation (apparently true), as a good example of what not to do if you want to "lose friends, and influence people into a bad state of mind."

The secretary's example referred to a prominent business man who approached the cashier of a telephone office and tendered a personal check for his telephone rental, but without his monthly bill. He was informed by the SYT (sweet young thing) that he would have to have a duplicate copy (see the girl at the far counter) before the bill could be paid. The customer pointed out that he couldn't wait to pick up a duplicate copy as directed because he was parked on a yellow line and had to get back to his car.

In spite of his plea that he be allowed to leave his money and depart in peace, he was firmly informed by the SYT that he *could not* pay his bill unless he would get the duplicate, "the rules you know". You guessed it, the customer tore out with the bill unpaid and muttering under his breath.

No one will argue against the merits of the ruling that requires a duplicate bill in case the customer shows up without the original, but certainly from our vantage point, it is a gross error in judgment on the part of a clerk to refuse to accept money when tendered under the circumstances here related. There are innumerable ways in which a public utility can endear itself to the public which it serves and one good way is to "bend" the rules on special occasions.



CABLE FAULT Location Techniques

By

B. C. BURDEN

SKILL AND EXPERIENCE enable telephone men to quickly locate sources of telephone cable faults. This article starts a series of articles prepared for use as "reference course" for old timers and to acquaint newcomers with establish practices.

General

ALTHOUGH anyone with a good pair of eyes can usually find trouble on open wire leads, it takes some degree of skill and experience to quickly and accurately locate faults in telephone cable. Basic fault location methods have changed but little through the years but some new testing equipment now available plus improvement in testing techniques have made fault location a more exact procedure than in the old days. This article and several to follow were prepared for use as a "refresher course" for old timers, as well as for study purposes of plant methods for the "newcomers" who desire to familiarize themselves with this phase of telephone testing.

Effect on Service

ONE OF the most troublesome of the several types of faults that occur in telephone cables is "moisture trouble". Faults of this type are of particular concern to the Plant Manager as a simple fault may interrupt the service of a substantial number of subscribers. It is not unusual for telephone service to an entire section of a community to be temporarily affected by a single pin hole in the sheath of a main feeder cable. Faults of this nature require prompt action to avoid "communication breakdown" in a community. Obviously, they are much more serious than faults which affect the service of only one or two telephones. When a single telephone is out of order, the subscriber can generally make use of his neighbor's telephone. But, when service to one entire section of a city is out, no such temporary relief is possible. Independent telephone company plant men responsible for cable maintenance should school themselves in modern fault location techniques so that service interruptions will be kept to a minimum.

Getting "It" Before It Gets You

ONE OF the best ways of handling cable trouble is to "nip it in the bud". The most prevalent type of cable trouble is that due to the entrance of moisture. Many cable failures can be anticipated and corrected "before they occur" by periodic inspection and repair trips over the entire cable plant. There are many factors which tend to cause sheath breaks. Typical examples are: bad tree conditions; cable rubbing against poles; strain on cable terminal lags; improper slack at corners; lack of lightning protection at junctions of open wire and telephone cable; etc. Minor repairs can usually be made at time of inspection and major repairs effected later by a small crew. A "preventive maintenance program" not only minimizes service interruptions, but also prolongs the life of the cable plant.

Types of Cable Faults

FAULTS which result in a cable pair becoming completely or par-

tially inoperative because of some abnormal condition are known as "electrical faults". There are four basic types of "electrical" cable faults ordinarily experienced in exchange or toll cable work. These are shown in Fig. 1 and are referred to as grounds, crosses, shorts, and opens.

There are also three types of so called "termination faults" which may occur. These are shown in Fig. 2 and are known as reversed pairs, transposed pairs, and split pairs. This latter type of trouble represents errors in splicing which occur between the central office and cable termination points. This latter type of fault is objectionable because it may result in crosstalk and noise and it complicates the cable plant record.

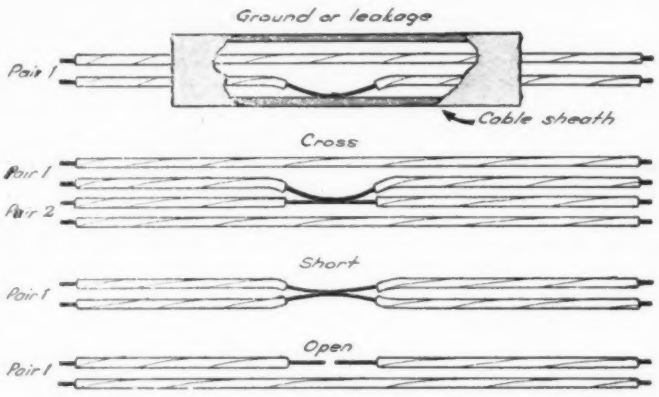


Figure 1—Four basic types of "electrical" cable faults.

A *reversed pair* is one in which the tip and ring wires of a pair are reversed at a termination point. Normally this is not of particular concern, especially in those exchanges where little effort is made to keep the tip and ring wires "straight" through the exchange. Transposed pairs, which means that pairs do not appear on their proper terminals, are a nuisance, although normally little effort is made to locate this type of fault. Special notes are needed in the cable record to show transposed pairs. This causes some confusion in the assignment of pairs, but otherwise is not of much concern. Split pairs may, and usually do result in crosstalk between the two pairs that are split.

Although there is no way in which to locate the point at which a pair is reversed or transposed, it is feasible by the inductive tone fault location method to locate the point at which a split occurs. Whether or not it would be desirable to locate and correct split pairs will depend on the number of vacant pairs available as well as the amount of crosstalk that may be present between the two pairs involved in a split.

Electrical faults such as grounds, crosses, shorts, and opens can be classified with respect to characteristics as: (1)—Moisture faults, (2)—Metallic faults, (3)—Carbonization faults. Moisture faults are those due to the entrance of moisture through an opening in the cable sheath (or at time of splicing) which lowers the insulation resistance of the cable conductors. It usually takes the form of leakage between pairs and leakage to ground. Metallic faults are those in which the two wires of a pair or adjacent pairs become metallically crossed with each other or metallically grounded on the sheath. This type of fault occurs most frequently in sleeves and at cable terminals or, in fact, at any spot where the cable may have been damaged during installation. It may also result from a severe lightning discharge or a cross with a power line. Carbonization faults result, either from a lightning discharge between pairs or pairs to sheath, or from a cross with a high voltage power line, which causes carbonization of the paper insulation hence lowers its insulation resistance to ground and to other conductors. An experienced testboard man can usually tell, by the indications on his ohmeter, the type of trouble with which he is dealing.

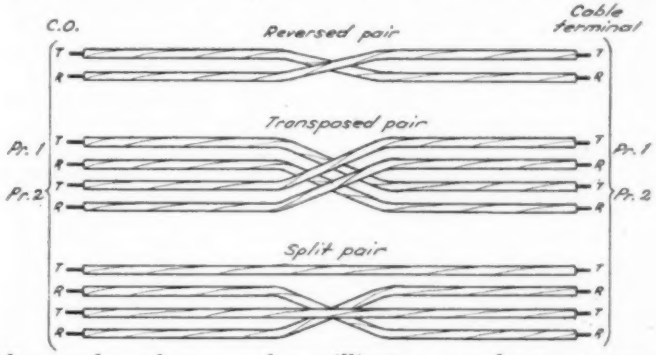


Figure 3—Types of termination faults.

Effect of Fault Resistance

IN SELECTING the best fault location method for a specific case of trouble it will be helpful if some idea of the nature of the fault can be gained by first diagnosing its action. One of the first steps in analyzing a case of cable trouble is to identify the wires which are at fault and to then measure their insulation resistance to ground and between pairs. Measurements can be made from the wire chief's test panel; from the main frame (see Fig. 4) using a portable ohmmeter; or with an ohmmeter from an outside terminal. Insulation resistance tests should be made with an ohmeter (or other means) capable of giving good readable indications on faults with resistances as high as several megohms. Although it is normally not feasible to locate faults with resistances higher than 200,000 ohms, insulation resistance tests on all pairs in a feeder cable are often necessary to determine in which section of the cable plant the fault lies.

Insulation resistance tests can also be made with the galvanometer in the Wheatstone bridge. Typical galvanometers of the type used in portable bridges usually have a sensitivity of one scale division for one volt through one megohm. Series resistors should be inserted in series with whatever external battery is used in making insulation tests with a galvanometer to limit the current to a few milliamperes and prevent possible injury to the meter (see Fig. 5). One or two thousand ohms should be connected in series with the galvanometer and test battery for potentials up to 90 volts.

Variation In Fault Resistance

WHEN MEASURING insulation resistance it will be observed that the resistance will often increase during the time the ohmmeter is connected to the pair in trouble. This results from an electrolytic action or a temporary "drying out" of the pair due to the measuring current (see Fig. 6). When measuring the leakage on cable pairs thought to be at fault or which are to be used for locating cable trouble, it is desirable

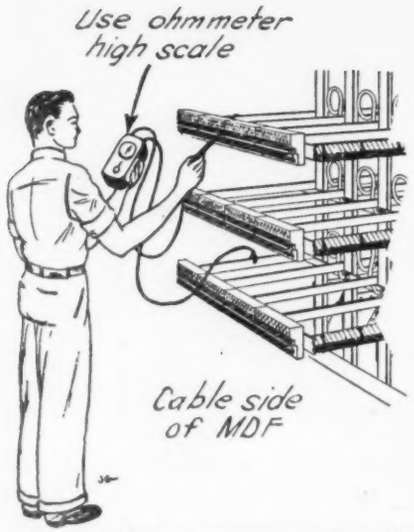


Fig. 4—Measurements can be made from the mainframe using a portable ohmmeter.

that any connected drop wires be disconnected at the cable terminals to avoid false indications because of leakage in lightning arrestors, drops in trees, bells across line, etc.

Moisture faults can generally be distinguished from "metallic" faults by a gradual falling off in the resistance reading when an ohmeter measurement of insulation resistance is made. It is also often indicated by a grinding sound which occurs when a receiver in series with one or more dry cells is connected across a faulty pair or between the pair and ground. Metallic shorts, crosses or grounds will generally prove quiet when tested by the receiver method and will show little change in resistance when tested with an ohmmeter. Carbonized insulation will vary in its action. It may either show a steady reading or quiet tone. In the case of aerial trouble, if the wind is blowing, the movement of the cable span in which a carbonized fault occurs may vary the intimacy of the carbon contact and cause noise or fluctuation in a meter reading.

Determination of Faulty Cycle

WHEN preliminary tests indicate moisture trouble, a check of the insulation resistance on vacant pairs scattered throughout the main feeder cable, will usually disclose the "cable pair cycle" in which the fault lies. The faulty cycle is shown by varying amounts of leakage on virtually all points in the count. Although this test is not infallible, if the cable plant is well maintained, it is usually feasible to determine the section of cable in which the fault lies. This narrows the search and expedites the location of the fault (see Fig. 7). Most frequently the fault lies in the smaller cables such as 25 and 50-pair sizes, which because of their lighter weight and thinner sheath are more susceptible to mechanical injury.

After an analysis has been made of the fault to determine its nature and if possible, the section of cable involved, the next step is to select the method most appropriate for its location.

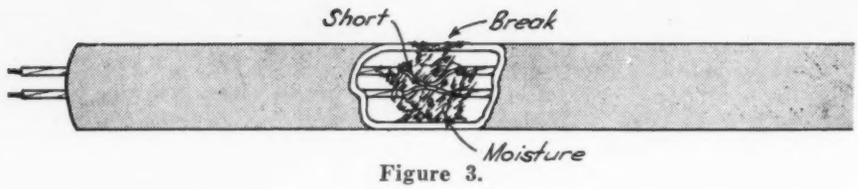


Figure 3.

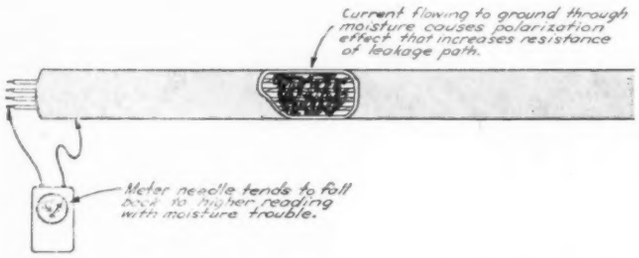

Current flowing to ground through moisture causes polarization effect that increases resistance of leakage path.
Meter needle tends to fall back to higher reading with moisture trouble.

Fig. 6—Temporary drying out of pair due to measuring current.

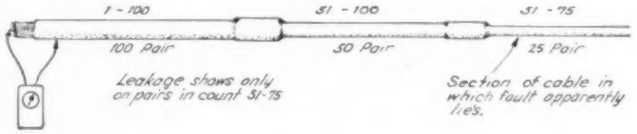


Fig. 7 — Check of vacant pairs will usually disclose "cable pair cycle" in which fault lies.

Cable Fault Location Methods

CABLE FAULTS can be located by any one or combination of several methods. The particular method to use for a given case will depend on the type of fault, the skill of the operator, and of course, the equipment available. Fault location methods may be classified as: (1)—Visual inspection method, (2)—Sectionalization method, (3)—Wheatstone bridge method, (4)—Inductive tone method, (5)—Acoustic method.

The location of aerial cable moisture trouble by a *visual inspection* of the cable sheath consists in driving or walking along the affected cable and looking for likely spots at which a sheath break might occur. For example, assume a 25-pair cable, 1000 feet long shows evidence of moisture trouble. Driving along this cable might disclose one spot at which the cable is involved with unusually heavy tree growth. A visual inspection of the span at this point will, more often than not, reveal a crack through which moisture could have entered. The sheath is opened and the cable core boiled out, and if this clears the trouble, everything is fine. If not, the search must be continued.

Location By Selectionalization

THE LOCATION of cable faults by the *sectionalization method* involves the testing of insulation resistance of one of the pairs in trouble at various points along the cable. The sheath is opened, a pair in trouble is cut, and a portable ohmmeter is used to test the leakage in each direction to determine whether the trouble has been passed. This method (see Fig. 8) permits narrowing the search for the fault down to a narrow section of cable where it

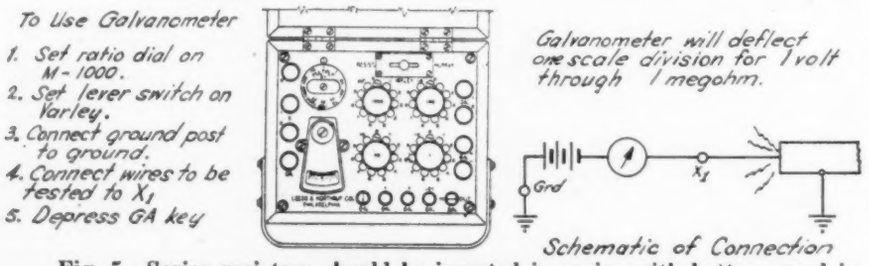

To Use Galvanometer
1. Set ratio dial on M-1000.
2. Set lever switch on Varley.
3. Connect ground post to ground.
4. Connect wires to be tested to X1
5. Depress GA key
Galvanometer will deflect one scale division for 1 volt through 1 megohm.
Grd
X1
Schematic of Connection

Fig. 5—Series resistors should be inserted in series with battery used in making insulation tests with a galvanometer.

(*Please turn to page* 56)

USITA Washington Office Serves Independent Industry

USITA Exec. Vice Pres. CLYDE S. BAILEY.

WASHINGTON OFFICE of United States Independent Telephone Association efficiently performs many duties for Independent industry. Our correspondent prepared this article to acquaint "new comers" and "old timers" with the USITA Washington staff.

THE YEAR 1947 marked the anniversary of 50 years of worthwhile service to the Independent telephone industry by the United States Independent Telephone Association. Since 1943 the association has been under the exceptionally able executive direction of Clyde S. Bailey, assisted by a capable staff and serving from headquarters established in Washington at the beginning of that year.

The present Washington staff consists of Mr. Bailey, executive vice-president; George C. Richert, technical assistant and association engineer, and Floyd D. Ridings serving as secretary and assistant treasurer. The secretarial and clerical duties are handled in an expert manner by Mrs. Margaret P. Bledsoe (secretary to Mr. Bailey), Mrs. Leola D. Fitzwater (secretary to Mr. Ridings), Miss Margaret K. Thornton and Mrs. Madalynn M. Wessinger (typing and general clerical work). Everett R. Call assists Mr. Ridings with preparation of the annual statistical report.

The Washington headquarters consists of a suite of six well located rooms on the fourth floor of the Munsey Building, facing historic Pennsylvania Avenue. Every inch of the present offices is fully devoted to some essential part of the association's activities and represents a good example of 100 per cent space utilization. It is evident to those who have visited the offices that as time goes on this active headquarters staff will need more spacious quarters.

Meet The USITA Headquarters Staff

A THUMBNAIL sketch of the background of the Association's headquarters staff may be of interest to those who "came in late." Mr. Bailey, as executive vice-president of the association, functions as its general manager and is responsible for directing all activities of the Washington office. The Independent industry is united in the opinion that he has manifested the highest degree of executive and managerial skill in discharging the many important responsibilities of his position.

GEORGE C. RICHERT, USITA Technical Assistant and Association Engineer.

Mr. Bailey was born in Somerset, Pennsylvania and has spent the major portion of his life in Washington. After his graduation from George Washington University in 1924 with an L. L. B. Degree, Mr. Bailey was admitted to the bar. He became associated with the National Association of Railroad & Utilities Commission and was assistant general solicitor and secretary of that organization at the time he was appointed Washington representative of the U.S.I.T.A. in November, 1940.

His broad experience in the regulatory field, gained while with the N.A.R.U.C., has been of real value to him and to the industry in connection with his work in the Independent telephone field. The unusually fine showing Mr. Bailey made as Washington representative of the Association during the period 1941 to 1943 brought him in 1943 the well merited election as executive vice-president of the U.S.I.T.A.

Always a man alert to industry problems, the establishment of the headquarters in Washington gave Mr. Bailey an opportunity to render a complete and valuable service to Independent telephone companies. During the war years and since, the Washington office has proved invaluable in quickly recognizing and evaluating legislative trends and other developments of significance and importance to the Independent industry. Through the medium of his excellent general letters which go out every few days

to the association's member companies, Mr. Bailey has kept the field fully advised at all times on all matters in which the Independents have a stake.

His "know-how" in connection with legislative procedures and his wide acquaintance in the Nation's Capital have proved of invaluable assistance to Independent telephone companies with governmental problems. Both in war and peace the value of a Washington headquarters has been amply demonstrated.

Mr. Bailey not only has the full respect and confidence of the leaders of our industry, but also of the top men in government who have found

Members of USITA office staff (standing left to right): Margaret K. Thornton, Madalynn M. Wessinger. Seated—Margaret P. Bledsoe, secretary to Mr. Bailey.

him to be straightforward and logical in his representations to Congressional committees and others.

The increasing importance of legislative and governmental regulatory bodies in the telephone field today has made the Washington office particularly valuable to the industry. The Washington office has done an exceptionally fine job in carefully analyzing the dry "difficult to read" government edicts, orders, releases, etc., and condensing them into pithy, concise and readable statements.

Mr. Bailey is assisted in his manifold duties by George Richert, who serves as engineer and technical assistant. Mr. Richert is the latest addition to the Washington staff, having been appointed to the association in August, 1947. He was born in Duquesne, Penn. Following graduation, in June 1926, from Pennsylvania State College he spent almost 20 years in the communications field. During the major portion of this time he was with an operating company of the Bell System.

Mr. Richert became connected with the Communications Division of W.P.B. during the war and was later associated with the Public Utilities division of the Treasury Department. While with that organization he prepared recommendations covering the establishment of a tandem-dial tie line switching center which was cut into service on February 2 of this year and is designed to serve all of the PBX switchboards of the various governmental activities in the Washington metropolitan exchange area; and a nationwide intercity leased line network to meet the long distance telephone requirements of all activities of the government.

In addition to assisting Mr. Bailey, Mr. Richert acts as secretary of various technical committees of the U.S.I.T.A.

Floyd D. Ridings joined the Washington staff in January, 1944. Prior to that time he was associated with several Independent operating companies from 1916 to 1939 in various accounting capacities. During the war he served in an important administrative position with the W.P.B. He was elected assistant secretary and served the association in this official capacity until October, 1944 when

(Please turn to page 65)

USITA Announces Program For Executives Conference

THE program for the Executives Conference of the United States Independent Telephone Association to be held at the Edgewater Beach Hotel, Chicago, April 12-13 will be noteworthy for the formal addresses to be delivered, committee reports to be presented, and opportunity for the give and take of informal conference discussion.

The following speakers will be presented at prescribed times during the Conference and with opportunity at the end of each of the four sessions for questions and answers as well as informal discussion.

(1) What Management Would Like to Look Forward To—President Oscar Burton.
(2) A Round-Up Report from Association Headquarters—Clyde S. Bailey.
(3) The Utilities Face a Big Financial Problem—A. W. Kimber.
(4) Adequate Earnings as the Key to Efficient Service—R. A. Gantt.
(5) Putting Your House in Order Before Applying for Rate Adjustments—Merle Hale.
(6) Experience of A Small Company in Obtaining Rate Increases—LaMar S. Stoops.
(7) Suggestions From An Intermediate Size Company in Obtaining New Rates—J. T. Naylor.
(8) The Cost of Telephone Service to the Subscriber is Less Today Than Yesterday—Mr. A. N. Johns.
(9) Facilities for Growth—Dean Barnes.
(10) Coordinated Construction—E. H. Danner.
(11) Inventory Controls—F. E. Norris.
(12) Suggestions on How to Meet the Manpower Shortage—H. E. Hussey.
(13 Changing Concepts of Valuation for Rate Making—Arthur E. Nelson, Esq.
(14) New Frontiers of Service—Radio, Carrier, Voice Recording—R. H. Herrick and Ray Blain.

Much of the USITA work is carried on by committees with members appointed for their particular qualifications for service in their respective fields. Some of these committees have been engaged in such important work that reports will be presented by or on their behalf at appropriate places during the Executives Conference or at the meeting of the Board of Directors. The general committees and chairman are as follows:

Accounting Committee—H. C. White, chairman; Advertising Committee—C. C. Pearce, chairman; Commercial Committee—R. B. Still, chairman; Dial Interexchange Committee—F. E. Norris, chairman; Employment Relations Committee—J. H. Agee, chairman; Plant Committee—G. H. Miller, chairman; Radio Service Committee—F. E. Norris, chairman; Tax Committee—H. V. Bozell, chairman; Toll Compensation and Settlements Committee—E. M. Blakeslee, chairman; Traffic Committee—C. C. Donley, chairman.

PRACTICAL--

"HOW TO DO IT"

SUGGESTIONS...

by

MYRLE SHAFER

MIDGET SOLDERING IRON GIVES FOUR DEGREES OF HEAT . . .

AN ELECTRIC soldering iron of the midget variety has been developed which uses a Calrod type heater element. The iron is 8 inches long, weighs less than 2 ounces, and operates from a 25-watt, 6-volt transformer. Several voltage taps are provided to give 4 degrees of heat. Tips of ¼ and ⅛ inch in diameter are available. This iron should prove useful for soldering in confined spaces particularly in switchboard multiple, in automatic switch banks, etc.

• • •

NEW IDEA IN HIGH CURRENT RADIANT HEATING . . .

THE RADIANT heating of rooms by use of resistance wires buried in the floor or sidewalls represents a more or less recent innovation. Radiant heating is said to be more comfortable than "concentrated type" heating methods. Past installations have consisted of relatively small resistance wire operating at 110 or 220 volts from the usual house power circuit. A new system makes use of ½ inch Bethlehem plow steel rope cable operating at a low voltage but high current in order to produce the same amount of heat. It is claimed that the larger cable insures against electrical failures which could result due to corrosion, mechanical damage, etc. in the low current high voltage type of radiating wire.

The new method consists in simply winding the heavy steel cable back and forth on the sub-floor so as to provide the desired radiating surface. The ends of the cable are connected to transformers having variable voltage taps. The voltage selected may range from 15 to 70 volts, thus enabling the current to be adjusted to fit the length of cable involved.

Experience in California has shown that current density should be such as to give a radiation of from 10 to 15 watts per square foot with cable spaced on a 12 inch basis. Currents as high as 130 amperes are used. This type of installation is primarily suitable for concrete floors where the floor can be poured over the heating element.

• • •

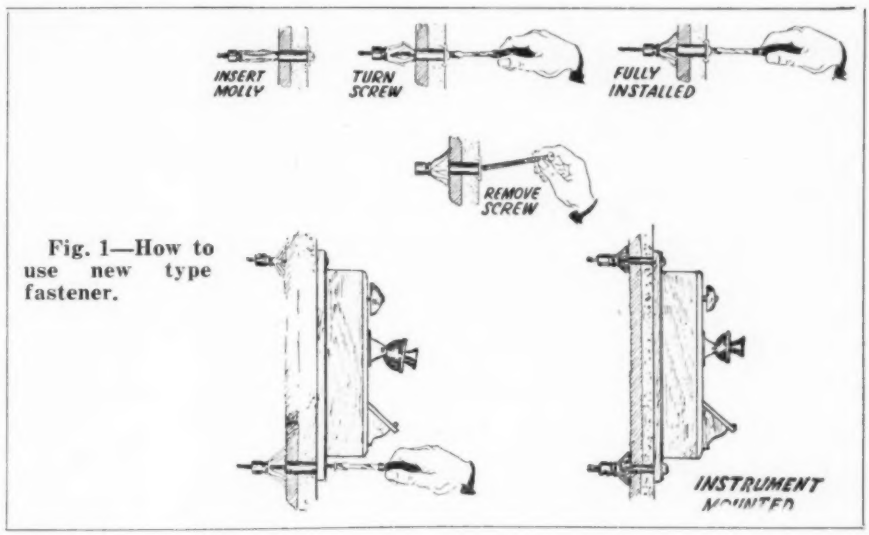


Fig. 1—How to use new type fastener.

NEW TYPE FASTENER HAS MANY USES . . .

A NEW FASTENER suitable for attaching telephones and other equipment to walls, floors, etc. may prove quite popular. It uses a somewhat different principle than the usual type. One advantage of this unit over previous types is the small diameter hole required for it.

It is simple to install as all that is needed is a drill and screw driver. Fig. 1 illustrates the use of this new fixture. It is referred to as a "Molly". The hole is drilled, the unit is inserted and the screw turned up tight which anchors the stud in the hole as shown. The screw is then removed and reused in attaching the equipment to the wall.

• • •

PROPER HANDLING OF THE CUSTOMER'S DOG . . .

MANY PEOPLE credit dogs with a degree of intelligence secondary to that of man, yet many canines are unable to distinguish between an actual trespasser and telephone installers, or troublemen, with legitimate business on subscriber's premises. The unpleasant result is that these men are sometimes bitten, particularly when they are not familiar with dogs and their ways.

Telephone employees, whose work requires that they enter private proper-

(Please turn to page 40)

from a practical investment; to

look at these advantages of Leich's 86 magneto telephone

The money you invest in Leich's 86 magneto telephone is wisely spent. Tens of thousands of these modern magneto telephones are now in service. Re-orders come in every day, indicating that other magneto operators have found this telephone a practical investment.

Excellent transmission and reception are guaranteed, even on long, heavily loaded rural lines. The Leich Alnico generator is universal, can be used to replace all former 3, 4, and 5-bar generator models. The attractive, modern styling appeals to both city and farm subscribers.

The Leich 86 is a complete magneto wall telephone with the exception of the batteries. It can be readily separated into a desk set and generator box, using the same parts, same housing.

Deliveries on this popular magneto telephone are now being made promptly. Why not try one and see for yourself.

Complete listings of Leich's line of magneto telephones, including the No. 86 telephone described above. It's yours for the asking. Write Leich Sales Corporation, 427 West Randolph St., Chicago 6, Illinois.

Do you have this Catalog?

nt standpoint-

Attractive all-Bakelite case

Capsule type transmitter and receiver

Same housing for wall or desk models

Alnico generator replaces all 3, 4, and 5-bar models

Excellent transmission, even on long, heavily loaded lines

g?

Leich

MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907

ties, should understand how to properly handle dogs. Many canines are friendly, or at least indifferent to the presence of strangers. Only a few dogs are actually vicious.

If a telephone is to be installed, or a troubleman is looking for a fault in a residence telephone, and he finds that there is a dog on the premises, he should tactfully suggest to the subscriber that he place the dog in another room. A good explanation to make in such cases is that the canine might be frightened or become excited, as the result of the employee moving around in the basement or upstairs rooms.

If the subscriber is not at home and the employee discovers that there is a dog in the house, he should pay no attention to it, but go about his business quietly, making it evident that he has every right to be on the premises.

A friendly or an inquisitive dog may approach the worker. In this case, the latter should stand still and allow the canine to smell his hand. Dogs depend, primarily, on their sense of smell for identifying persons and objects. In this way, the dog will become used to the presence of the worker and will usually pay no further attention to him. If it does not sniff at the worker's hand, no harm is done, but he must avoid attempting to pet the dog.

If the dog, however, threatens to attack, it should be faced down, the worker meanwhile backing away slowly until he can safely turn around and return to his car. Turning one's back before then, or running away, will encourage the dog to attack. The worker should make no further attempt to enter the premises, until he can contact the subscriber and have him tie up the dog, or otherwise confine it.

• • •

FIELD TEST ANTENNA AIDS ESTABLISHMENT OF MOBILE SERVICE

IN THE establishment of radio service either of the mobile or fixed link type, a telephone company may find it desirable to make field tests. These tests are particularly useful where the terrain is hilly and where the question arises as to the extent of coverage for various antenna locations.

Some of the larger companies are making use of field test trucks. This consists of a ½-ton panel truck equipped with a mobile transmitter and receiver and provided with a collapsible antenna. The truck is driven to various points at which transmitting and receiving antennas could be located and tests established with other fixed points. For effective tests it is necessary to have an antenna which can be quickly raised to position, and which will have an effective height of at least 35 or 40 feet.

Fig. 2—Adjustable height antenna suitable for radio field tests.

A newly designed collapsible antenna made by the Premax Products Company is very useful for this purpose as shown in Figure 1. It is fully collapsible and adjustable and can be extended in lengths of 35 feet. It will collapse down to 6 feet.

• • •

CONVERTING MAGNETO WALL TELEPHONE TO HANDSET TYPE . . .

WITH SUBSCRIBERS expressing a decided preference for handset type magneto telephones, many telephone companies are confronted with a growing surplus of the older types of magneto wall sets. As is often the case, such sets are in perfectly good shape, needing only to be cleaned and occasionally refinished.

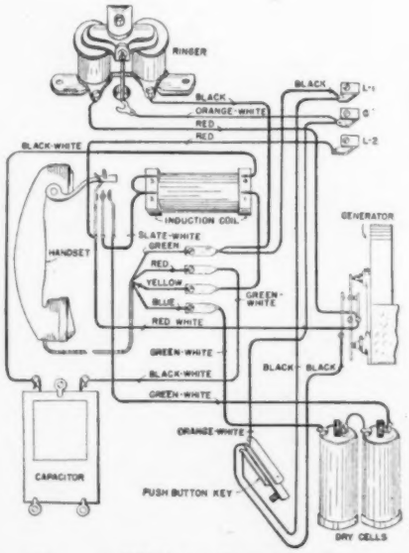


Fig. 3—Wiring diagram of magneto wall set, using four conductor handpiece (Courtesy Stromberg-Carlson Company.)

It is not economical to discard these sets, particularly when it is planned to convert the exchange to dial operation sometime in the future. In such cases, special kits may be obtained from manufacturers and jobbers for use in converting the wall sets. These kits contain, in the case of one manufacturer, a handpiece with 4-conductor cord, a switch hook shaped to accommodate the handpiece, and an escutcheon for blanking over the holes left on the lid of the wall set when the transmitter and associated arm are removed. Additional terminals and screws are also provided. Figure No. 3 illustrates how a typical magneto wall set is converted to use a handpiece.

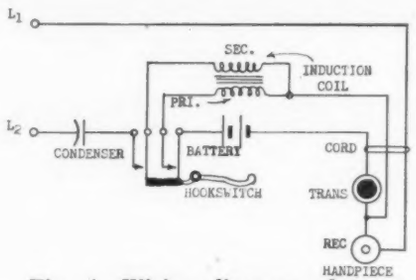


Fig. 4—Wiring diagram of transmitter and receiver circuits of magneto wall set, when three-conductor handpiece is used.

If it is desired to use a handpiece with 3-conductor cord, it will be necessary to rewire the elements of the subset. This is due to the fact that a common contact is used in the hookswitch and a common wire in the transmitter and receiver circuits. An additional contact spring must be used in the hookswitch, and the receiver and transmitter circuits wired, as shown in Figure No. 4.

• • •

LADDER & TOOL RACK MOUNTINGS FOR MAINTENANCE CARS . . .

WHEN MOTOR vehicles first came into general use for outside plant maintenance, ladders and long tools were carried in a special rack mounted on the left or driver's side of the car. This design eventually proved to be unsatisfactory, principally because of inconvenience and hazard to the driver. He was obliged to enter or leave the car from the far side of the cab at all times and his view from the left often was obscured by the ladder and tools.

The overhead ladder and tool rack arrangement shown in Figure No. 5 was introduced a few years ago and soon proved popular with many telephone companies. With the overhead

Fig. 5—Overhead ladder and tool rack arrangement leaves driver's view free of obstruction.

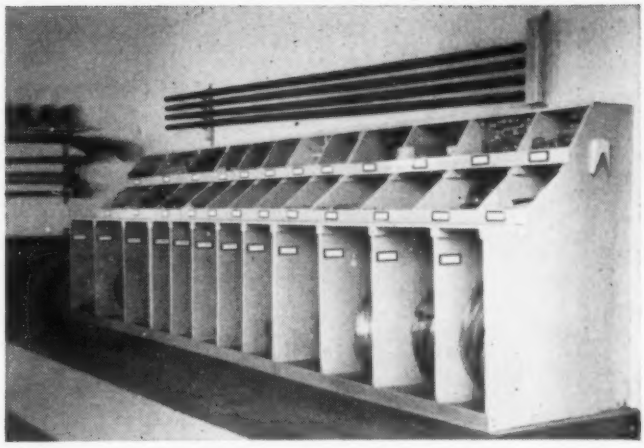


Fig. 6—Neatly arranged bins are used for storage of pole line hardware and wire.

design, there is no obstruction of the driver's view from the side, nor interference with his entering or leaving the car. Besides the ladder, it is possible to carry any desired number of long handled tools, such as a tree trimmer, one or two pike poles, and a digging shovel.

A rack for carrying a four foot stepladder is shown mounted just behind the cab and above the rear window. A leather strap holds down this ladder. The carrying of a stepladder minimizes the need for the maintenance man or installer to borrow a ladder from the customer, which might not be in a safe condition to use.

• • •

FCC ADVISES CAUTION IN USE OF LOW POWER OSCILLATORS . . .

THE FEDERAL Communications Commission has advised caution in the use of low power unlicensed radio equipment such as phonograph oscillators, wired wireless, and certain types of "wiring saturation" carrier current equipment. In 1938 the Commission issued what were known as the "low power rules". These were for the purpose of specifying the conditions under which equipment capable of radiating radio waves would not require a F.C.C. license. They stated that equipment whose radiated radio frequency electro-magnetic field would not produce in excess of 15 microvolts per meter at a distance in feet of 157,000 divided by the radiation frequency in kilocycles would not require a license, provided it did not interfere with radio reception.

Since the end of World War II there has been substantial interest on the part of manufacturers, experimenters, and others in equipment of the phonograph-oscillator type, carrier system intercommunicating units, and other low powered radiation type equipment. Many circuits have been published in magazines without much, if anything, being said regarding the F.C.C. requirements for low power oscillators.

This has given rise to some carelessness in the design and use of this type of equipment and has resulted in interference to established communication services. The Commission evidently wishes to head off this type of interference which could become serious to broadcasting and television services, and to the various commercial uses of radio communication systems.

• • •

WELL-DESIGNED GARAGE STOREROOM . . .

A COMBINATION storeroom and garage designed for two cars and a substantial quantity of outside plant and central office maintenance material is proving highly satisfactory at Kent, Connecticut. See Figures 6, 7, 8.

Efficiently arranged along one end of the storeroom are the work bench, racks for ropes, tree trimming tools, etc. Crossarms are stored at the end of the room. Just inside of the door is a metal paint locker. A spacious "attic" accessible through a "pull-down type stairs" is available for excess storage that is needed in the average small telephone exchange. Neatly designed bins are used for the storage of pole line hardward and wire. The cement floor is painted with a grey cement paint to keep down dusting and an inexpensive hard surface asphaltic base floor covering is placed around the outside edge of the room. The building is 26 x 25 ft.

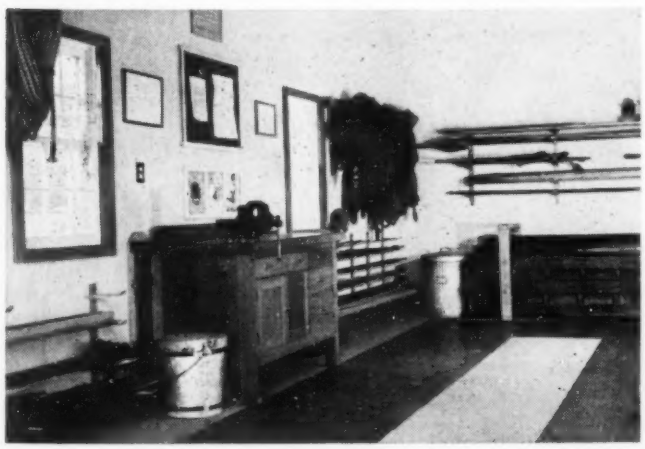
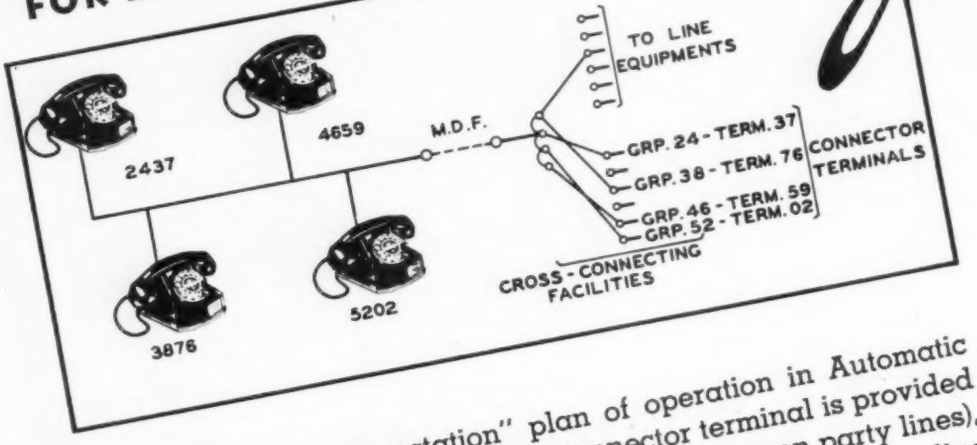


Fig. 7—Work bench, racks for ropes, tree trimming tools are arranged along one end of storeroom.

Fig. 8—Cement floor is painted with grey cement paint to keep down dusting.

THE "TERMINAL-PER-STATION" PLAN
FOR LARGE AUTOMATIC EXCHANGES

Gives



In the "terminal-per-station" plan of operation in Automatic telephone exchanges, a separate connector terminal is provided for each subscriber main station (including those on party lines), and facilities are provided through which any subscriber line may be associated with any line equipment and any connector terminal. This corresponds to the "jack-per-station" plan used in manual exchanges, and offers similar advantages — PLUS other advantages of its own!

The "terminal-per-station" plan provides complete flexibility for the handling of party-lines. Since each station is allotted a separate connector terminal, any subscriber may be assigned any desired number, and the assignment may be changed at any time without affecting other numbers on the same line.

Because of this and the many other advantages which it offers, this operating method is recommended by experienced telephone engineers for all exchanges of approximately 1000 lines or more. Before planning any exchange of this size, let us show you how the "terminal-per-station" plan will help you.

...es you ALL THESE ADVANTAGES!

- √ Maximum use of outside plant facilities.
- √ Equalization of originating traffic loads.
- √ Fewer directory number changes.
- √ A simple intercepting arrangement.
- √ Upgrading without directory-number changes.
- √ Greater flexibility in cross-connecting facilities.
- √ Uniform telephone number (no extra suffixes).
- √ One and two code ringing (Semi-Selective).
- √ Harmonic ringing (Full-Selective).
- √ Superimposed ringing (Full-Selective).
- √ Ten-code ringing.

} AS DESIRED

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems

Makers of Telephone, Signaling and Communication Apparatus . . Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions

AUTOMATIC ELECTRIC SALES CORPORATION, 1033 W. Van Buren St., Chicago 7, U. S. A.

Export Distributors: INTERNATIONAL AUTOMATIC ELECTRIC CORPORATION

Current COURT and COMMISSION Activities

Rate Boost Approved For Cyrus, Minnesota

The Cyrus Mutual Telephone Company has been granted authority to change its schedule of telephone rates and charges at its Cyrus, Minnesota, exchange.

The class of service for which the Cyrus company proposed rate revisions, together with present and proposed rates, are as follows:

Class of Service	Present Gross Rates	Proposed Gross Rates
Individual Line Business	$2.75 (a)	$3.50 (b)
Individual Line Residence	1.75 (a)	2.50 (b)
Rural Multi-party Metallic	1.75 (a)	2.75 (b)
Extension Stations —Business	.50 Net	1.00 Net
Extension Stations —Residence	.50 Net	.75 Net
Extension Bells ..	.25 Net	.50 Net
Siren Ringing		.50 Net
Extension Gongs.		.75 Net

(a) All gross rates payable quarterly in advance with a discount of 75 cents if paid on or before the 10th day of the first month of the quarter; 50 cents if paid on or before the 10th day of the second month of the quarter; and 25 cents if paid on or before the 10th day of the third month of the quarter in which service is rendered.

◆

Subscriber Asks $50,000; Claims "Wrong Number"

Charles Schenk has sued the Midwest Telephone & Utilities Company for $50,000 because of a wrong number.

Schenk said he became a subscriber of the Decker (Ind.) exchange in March, 1945. He said the directory listed a wrong number for him and the next directory, issued in October, 1947, did not correct the error.

The $50,000 is Schenk's estimate of the amount of business lost because calls failed to reach him.

◆

Deny Petition For Telephone Service Change

The Illinois Commerce Commission has denied a request of the Illinois Commercial Telephone Company to discontinue "free" inter-town telephone service between Coffeen and Donnellson and between Donnellson and Sorento, Illinois. Service between these towns has been given without extra charge.

◆

Commission Order Bans Stockholder Rate Variance

Rate variance between stockholder and non-stockholder subscribers of the Sinnott-Augsburg Telephone Company, Stephen, Minnesota, recently was ordered discontinued, by the Minnesota state Railroad & Warehouse Commission.

Stockholders paid $8.65 yearly for service, while non-stockholders were assessed $11.50 annually.

The commission termed this discrimination and ordered a new schedule of $1.75 per month for each of the company's rural stations.

◆

Seven Minnesota Companies Granted Rate Increases

Rate increases recently were granted telephone companies in seven rural communities by Minnesota Railroad & Warehouse Commission.

The commission granted the Clarkfield Telephone Company increases averaging 25 cents to $1.50 a month for its operation in the Clarkfield-Hazel Run area. Increases up to 75 cents a month will go to the Gardenville Cooperative Telephone Association, serving Garfield, Brandon and Evansville.

Other companies permitted boosts are the Hancock Telephone Company, Hancock, which was granted $1.50 increases or less, and the Lake Park Telephone Company, Lake Park, which received raises up to 75 cents.

The commission also approved sale of the Russell Telephone Company, Russell, to James Roubinek and John Rich.

◆

Southeastern Telephone Co. Requests Rate Adjustment

The Southeastern Telephone Company has filed application with the Georgia Public Service Commission requesting an emergency general increase in telephone rates. In its application the company cited increased operating costs and stated that it is now operating with a deficit as compelling influences.

W. C. Martin, of Fitzgerald, Georgia manager of the company, said the company's operating costs are the highest in its history, resulting in a deficit in operations and asked that emergency increased rates be made effective on April 1st at most of the company's exchanges.

Mr. Martin emphasized that the company's largest item of expense is wages which amount to more than all other costs combined. He said that general wage increases resulting from union negotiation in January of this year will increase the company's payroll requirements in Georgia in excess of $25,940 on an annual basis.

The requested increases in rates, which the company said would vary

with localities and local problems, generally range from $1.00 to $1.25 business service and 75c to $1.00 for residence service, depending upon classification. "In line with our long established policy, we would like to keep our rates down to a minimum," Mr. Martin said. "They have remained generally static for a good many years but are no longer adequate to pay present operating costs. It is only as a last resort that we are now asking for relief in order to more nearly balance some of the tremendous increases in telephone operating expenses."

The company stated in its application that there was no tangible information upon which a reasonable assumption might be drawn that the present upward trend of costs will not continue and stressed the need for emergency relief from the commission in granting the increases sought.

It was stated that even in the face of difficulty in meeting the increased service demands of the public it had added a total of 1538 stations in Georgia since the end of World War II, a gain of 32.9%.

The Southeastern company in its application to the commission said it was contemplating the expenditure of $1,100,000 for plant additions and conversions to automatic service during 1948 and 1949, to improve existing service and to expand its facilities. This is in addition to an excess of $408,000 already spent during 1946 and 1947. The application stated that "the ability of applicant to secure large sums of money which are essential to the continued rendition of adequate and efficient telephone service and to carry out the expansion program, is dependent upon and subject to applicant's earnings being sufficient to maintain a sound capital credit position."

◆

Sawyer (N. D.) Tel. Co. Granted Rate Adjustment

The North Dakota Public Service Commission has authorized the Sawyer (N. D.) Telephone Company to increase its rates in accordance with a proposed schedule presented by the company.

Under the new rates, the net monthly charge for business telephones will be $3.50; town residence, $2.50. The commission also approved an annual charge for "switching service" of $7.80.

◆

Concession Rates Barred By Indiana Rate Order

Under the recent Iindiana Public Service Commission order for increased rates for telephone service, La Porte, Indiana, practically all "concession rates" whereby some business telephone users were charged home rates have been eliminated.

Edwin L. Malone, district manager for the Indiana Associated Telephone Corporation, explained that only church telephones remain now on the "concession list."

He explained that the concession rates came into existence when the public service commission set up the tariff schedule for the telephone company in 1930. These concession rates were charged churches, schools, hospitals, and some other institutions.

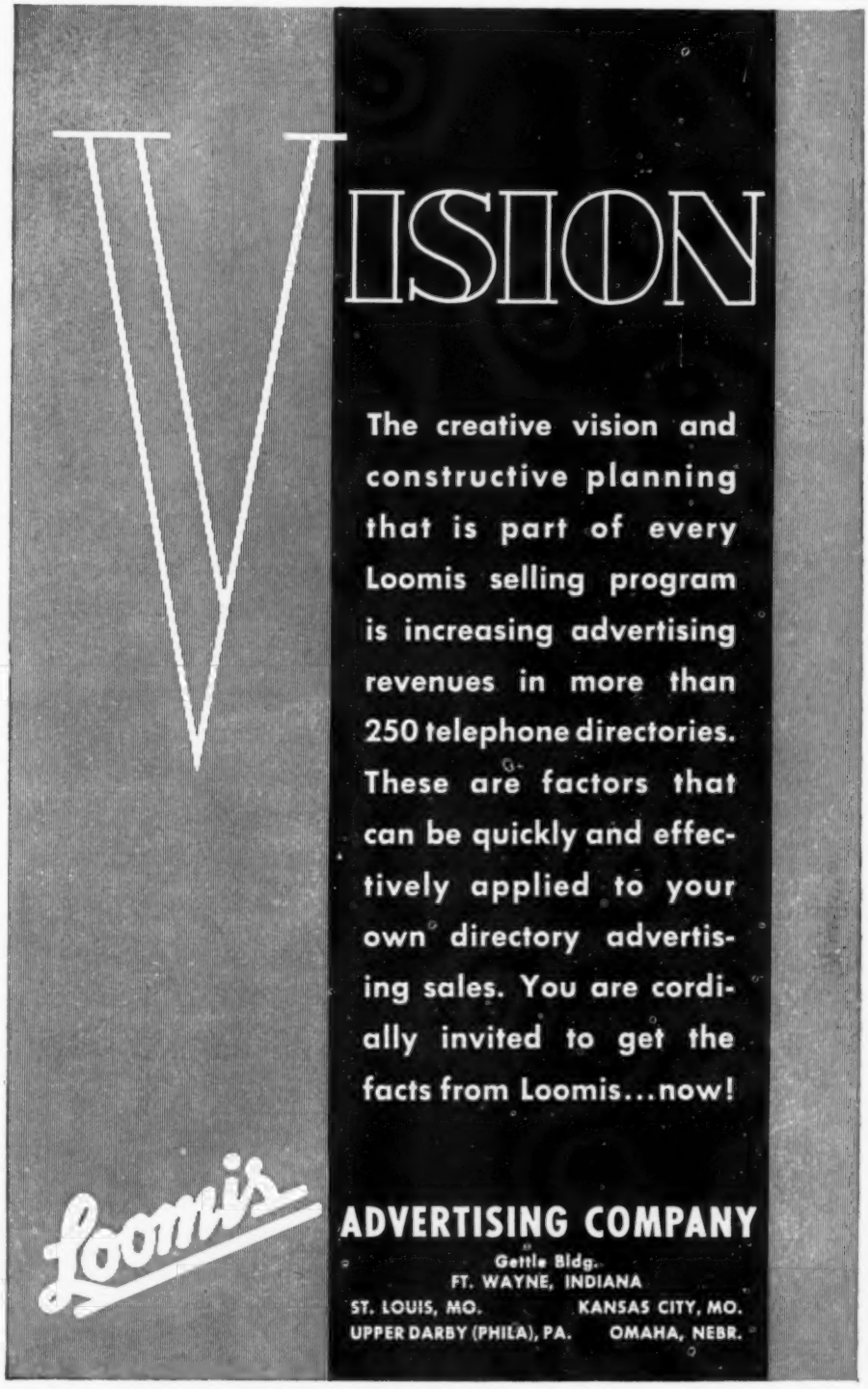
The commission's order eliminated the concession rates, except that churches will continue to pay home telephone rates.

◆

Columbia Utilities Co. Boosts Rates In Oregon Exchanges

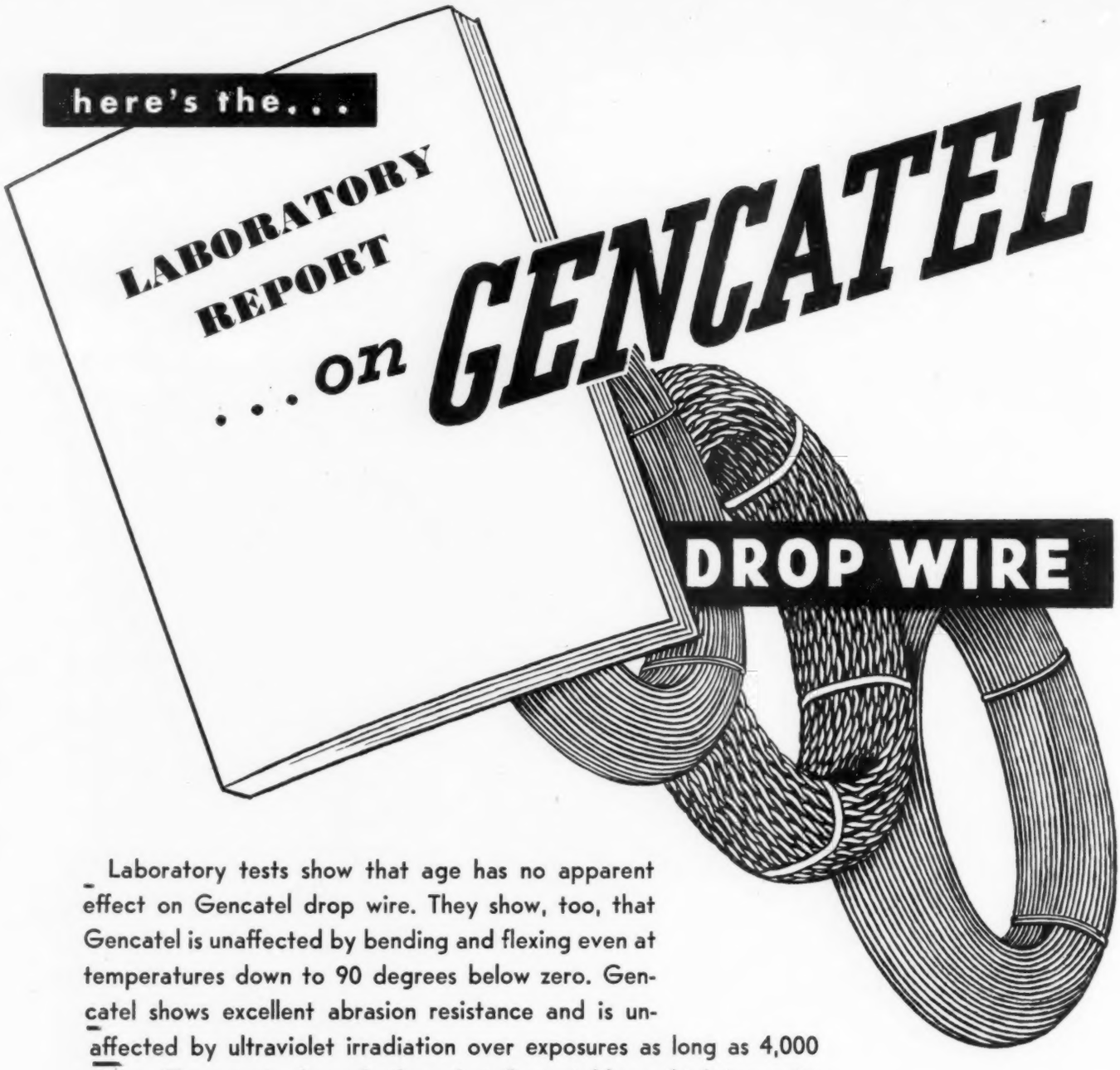
The Public Utilities Commissioner of Oregon has granted substantial rate increases to Columbia Utilities Company at all its Oregon exchanges. Toll rates have also been increased, placing all rates above 10 cents on a three-minute initial basis instead of the former five-minute basis up to and including 25 cents.

New rates now in effect at Eagle


VISION
The creative vision and constructive planning that is part of every Loomis selling program is increasing advertising revenues in more than 250 telephone directories. These are factors that can be quickly and effectively applied to your own directory advertising sales. You are cordially invited to get the facts from Loomis...now!
Loomis
ADVERTISING COMPANY
Gettle Bldg.
FT. WAYNE, INDIANA
ST. LOUIS, MO. KANSAS CITY, MO.
UPPER DARBY (PHILA), PA. OMAHA, NEBR.

here's the...

LABORATORY REPORT ...on GENCATEL DROP WIRE



Laboratory tests show that age has no apparent effect on Gencatel drop wire. They show, too, that Gencatel is unaffected by bending and flexing even at temperatures down to 90 degrees below zero. Gencatel shows excellent abrasion resistance and is unaffected by ultraviolet irradiation over exposures as long as 4,000 hours. These tests show, further, that Gencatel has a high immunity to effects of precipitation and temperature extremes.

But the best test of Gencatel for you is to try it in actual service. Order 5,000 feet today—and test it yourself. Please specify whether you want parallel or twisted pair.

Gencatel Drop Wire is made by General Cable Corporation, and is

RECOMMENDED AND DISTRIBUTED BY

AUTOMATIC ELECTRIC
SALES CORPORATION

1033 WEST VAN BUREN STREET, CHICAGO 7, ILL.

Point, Malin, Merrill, Prospect and Shady Cove are as follows:

	Old Rates	New Rates
Business Service:		
Individual Line	$3.50	$4.50
Two-party Line	3.00	4.00
Multi-party Suburban Line	2.50	3.75
Extension Station	1.25	1.50
Service Station Switching	.65	1.50
Service Connection Charge	2.50	5.00
Residence Service:		
Individual Line	$2.50	$3.50
Two-party Line	2.25	3.00
Four-party Line	2.00	2.75
Multi-party Suburban Line	1.75	2.75
Extension Station	1.00	1.25
Service Station Switching	.65	1.00
Service Connection Charges	2.50	5.00
Oakridge-Westfir Exchange:		
Business Service:		
Individual Line	$4.00	$5.00
Two-party Line	3.50	4.75
Multi-party Suburban Line	3.00	4.50
Extension Station	1.25	1.50
Service Station Switching	.75	1.50
Service Connection Charge	2.50	5.00
Residence Service:		
Individual Line	$2.75	$3.75
Two-party Line	2.50	3.50
Four-party Line	2.00	3.00
Multi-party Suburban Line	2.00	3.00
Extension Station	1.00	1.25
Service Station Switching	.75	1.00
Service Connection Charges	2.50	5.00
Bonanza and Lorella Exchanges:		
Business Service:		
Individual Line	$3.50	$4.25
Two-party Line	3.00	3.75
Multi-party Suburban Line	2.50	3.50
Extension Station	1.25	1.50
Service Station Switching	.65	1.50
Service Connection Charge	2.50	5.00
Residence Service:		
Individual Line	$2.50	$3.25
Two-party Line	2.25	2.75
Four-party Line	2.00	2.50
Multi-party Suburban Line	2.00	2.50
Service Station Swtiching	.65	1.00
Service Connection Charge	2.50	5.00

◆

Rate Boost Approved For Ackerman, Miss.

The Mississippi Public Service Commission has approved the petition of the Ackerman (Miss.) Telephone Company to increase its rates for local service.

The Ackerman company serves 190 magneto telephones and has 85 held orders which it expects to serve within the next three months.

The present and new schedule of approved rates are as follows:

Type of Service	Old Rates	Approved Rates
Private Business	2.50	3.75
2 Party Business	2.50	3.25
Private Residence	1.75	2.75
2 Party Residence	1.75	2.25
4 Party Residence	—	1.75

◆

Bell Telephone of Canada Requires Higher Rates

While net income in 1947 was adequate to meet dividend requirements, Bell Telephone Company of Canada cannot forever live within its present rates for service. Frederick Johnson, president, made this statement at the annual meeting. He added that the present rates were "established 21 years ago in the face of vastly different economic conditions" than now.

Mr. Johnson declared that the telephone industry, unlike many other industries, cannot finance out of earnings the expansion needed to meet demand for its service.

"Money for this expansion must come principally from investors, and to obtain this money the business must earn enough to attract and safeguard their savings."

Net increase of company telephones in service totaled 258,862 last year, Mr. Johnson said. He added that this exceeded the gain for the five-year period from 1941 to 1945 and was greater than the total telephones in service at the end of the first 35 years of the company's history.

"Looking to the immediate future we do not see an end to the high level of demand for service. We must therefore anticipate a continuing need for new capital.

"Part of the widespread construction program in which we are presently engaged will be financed, as in the past, by the employment of depreciation funds. Borrowings on the security of the company's property will, as formerly, provide some proportion of the new money that will be needed."

rely on *Runzel*

Yes, the telephone industry has learned over the years that Runzel cords, wires and cables are dependable . . . that they are accepted as the standard of the industry.

There is no diversion of interests at Runzel, no thousand-and-one items to claim attention and energy. All Runzel research, all Runzel production efforts are devoted to a single purpose —the manufacture of better cords, wires, and cables.

So, for trouble-free products, better service and complete satisfaction, look to the leader—Rely on Runzel.

RUNZEL CORD & WIRE CO.
4723-31 MONTROSE AVENUE • CHICAGO 41

Indiana association presented examples of good and bad telephone construction during series of plant-management meetings.

INDIANA Association Meetings Stress Service & Adequate Rates

Prepared by Service Committee
Indiana Telephone Association

REALIZING that many Indiana telephone companies were having difficulties in the post-war period in their attempts to bring their properties back to pre-war standards of construction and operating, the Board of Directors of the Indiana Telephone Association made a thorough analysis of the situation and concluded that the association should offer assistance which would hasten, if possible, the industry's return to normal operations.

Preparatory to the adoption of a program of assistance, the association made a survey of the entire Indiana telephone industry. Purpose of this survey was an attempt to locate sections where telephone conditions might be considered subnormal. Many of the things disclosed by the survey were generally known. For example, it was found that:

(1) The four long war years had taken heavy casualities in telephone plant.

(2(A difficult material situation had caused inadequate maintenance in both the war and post-war periods.

(3) Even two years after the cessation of hostilities, many exchanges were unable to make an appreciable reduction in the number of unfilled orders for service.

(4) Service to existing customers, in some localities, was below par because of heavily overloaded equipment.

(5) A few plants were in bad condition at the start of the war which speeded deterioration during the war and post-war periods when much maintenance had to be deferred.

(6) Some companies suffered from inadequate personnel.

(7) Orders for materials needed for maintenance and construction had, in some cases, not been placed.

(8) A few cases existed where company management was not sympathetic to an increasing public demand for modernization of antiquated systems.

(9) Complaints of poor, inadequate, or no service, to regulatory bodies were too high and in almost every such instance poor financial positions existed because expenses were mounting much faster than revenues.

The Association's Service Committee composed of E. J. Ford, Home Telephone & Telegraph Company, Ft. Wayne, as chairman; T. D. Dial, Indiana Bell Telephone Company, Indianapolis; Evan Wilson, Markleville Telephone Company, Markleville, and Association president W. J. Scheidler, Greensburg and secretary W. H. Beck, Indianapolis as ex-officio members, serves as a clearing house for many problems of Indiana telephone companies. The directors presented results of the survey to this committee with the suggestion that it develop a program designed to help companies who seemed to need and desire association assistance.

Service Committee's Three-Point Program

AFTER SEVERAL meetings the Service Committee proposed a three-point program which received speedy approval. The first point called for direct assistance to the managements of small companies who expressed a desire for help and who had no one within their own organization who could furnish the needed assistance.

The committee proposed that in as far as possible this help should be given by the association office but in cases where additional aid was required that assistance be asked from a larger company near the soliciting company. If this was impossible the committee proposed that the association employ, at its expense, persons who could do the required work. This service, of course, covered advisory matters only and did not mean that the association or its representatives would actually engage in any matters of operation or construction.

The committee also suggested that several meetings of toll-center chief operators be held; that every toll center chief operator and her assistant attend one of the meetings and discuss with nearby toll centers the problems of traffic which seemed of major importance. This proposal carried the stipulation that the meetings were not to include management or male traffic personnel, and that the chief operators attending would report the proceedings to their superiors and, if in their judgment it appeared advisable, that similar meetings be arranged at the vari-

(Please turn to page 69)

CHEMICAL TESTS FOR BOILER WATER— WHY NOT FOR WOOD PRESERVATIVES?

EVERYBODY KNOWS what water is, yet nobody takes it for granted. Periodic chemical analysis of water for boiler use is standard procedure in most of the power plants throughout the world.

On a dollar-and-cents basis, it's important that wood preservatives be checked as carefully as boiler water. It costs a lot of money to replace a line of poles. Simple precautions, easily taken, may avoid many a premature replacement. All that is necessary is to specify a preservative of known value as proved by test experience, one which can be identified chemically to guarantee positive repetition of the test experience.

Chapman Penta Preservative meets those requirements. Ample performance data from test plots in various climates proves that pentachlorophenol provides maximum protection against decay and insects. Pentachlorophenol, being a definite chemical substance, is unvarying in its characteristics and readily checked in the laboratory. It is the active ingredient of Chapman Penta Preservative.

With Chapman Penta Preservative your treating plant not only makes sure of adequate penetration, but predetermines the actual toxicity given to poles, cross arms and other structural wood. Moreover, the wood is clean and unobjectionable to your workmen. The cost of treatment with Chapman Penta Preservative, despite these advantages, is no greater than that of old-fashioned treatments.

Write or wire for full information about Chapman Penta Preservative. Factual material in abundance is yours for the asking.

CHAPMAN PENTA PRESERVATIVE

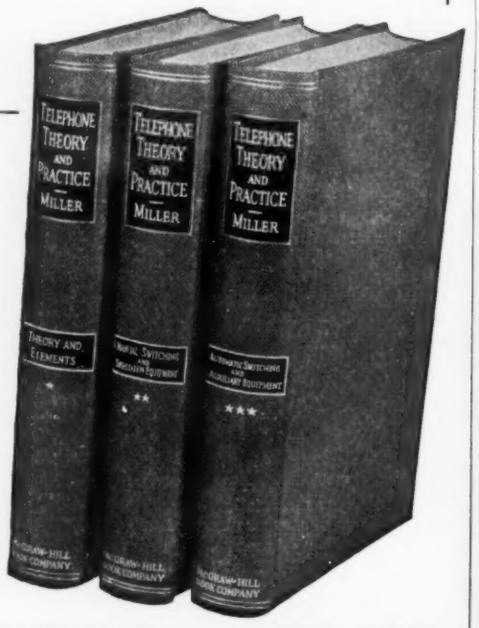
containing pentachlorophenol, product of The Dow Chemical Company

CHAPMAN CHEMICAL COMPANY ★ 333 North Michigan Avenue, Chicago 1, Illinois

A Complete Treatise on Telephony

Here are three books that can be obtained together or separately, which give a complete treatment of telephone practice, covering everything from simple fundamentals of telephone science and theory to construction and operation of technical equipment and apparatus used in telephony.

ORDER TODAY



Features of these books are the clear, understandable treatment; the simple language employed; and the profuse illustrations with drawings and photographs of actual apparatus and circuit diagrams.

TELEPHONE THEORY and PRACTICE

by KEMPSTER B. MILLER, Consulting Engineer

VOLUME 1

Theory & Elements

486 pages, 6x9, 272 illustrations, $5.50

Gives a simple foundation of elementary theory on which to base the extended discussion of practical phases of the industry in the other volumes. Covers such subjects as the science of sound, multifrequency alternating currents, thermionic emission, etc., and includes a practical treatment of the elemental parts of telephone apparatus, such as coils, contacts, condensers, etc.

VOLUME 2

Manual Switching & Substation Equipment

439 pages, 6x9, 327 illustrations, $5.50

Describes the construction and operation of subscribers' station and central station equipment used in manually-operated exchanges. The treatment is simple, practical and well-illustrated, covering the various types of instruments and switchboards in their entirety and also their component parts. Gives attention to special phases of central-office practice such as theory and practical details of current supply to all lines from a common source, etc.

VOLUME 3

Automatic Switching & Auxiliary Equipment

494 pages, 6x9, 287 illustrations, $5.50

Gives a simple and thorough treatment of automatic switching beginning with a discussion of substation dials and exchange numbering plans and extending to a detailed description of equipment and circuits for step-by-step, panel, rotary and all-relay systems. It also covers some auxiliary equipment common to both manually and automatically operated exchanges.

Order Direct from

7720 Sheridan Road — Chicago 26, Ill.

TELEPHONE ENGINEER PUBLISHING CORP.

JUST INTRODUCED A FEW SHORT MONTHS AGO . . .

THOUSANDS NOW IN USE!

TURNER *Low Pressure* FIRE POT

WITH EXCLUSIVE

"Carburetor Control"

New

IN PRINCIPLE, DESIGN, AND PERFORMANCE

There are reasons a-plenty why this Turner No. 275 Fire Pot has found such immediate and enthusiastic acceptance with users from coast to coast! Note especially the "Carburetor Control" feature . . . the exclusive *adjustable* air syphoning tube which enables the pot to operate at a pressure of only 20 to 30 pounds as compared with 40 to 60 pounds for older models. Tube can be moved back and forth in the burner . . . permits instant balancing of the gas and air mixture by actually syphoning air from the outside to meet widely varying fuel and job conditions. Important because it means more perfect combustion . . . a more intense flame, concentrated at the proper point and not distributed over the entire coil . . . eliminates carbonization . . . insures longer coil life. Turner No. 275 Fire Pot will melt 20 pounds of lead in 3 minutes; has fuel capacity of 9 pints; takes 6" melting pot. For complete details of construction and operation, write today.

THE TURNER BRASS WORKS

SYCAMORE ILLINOIS

Since 1871

Roundtable LINE and DESK Discussions

Edited By
J. S. REED, JR.

Q. We are planning to route a cable lead past a large barn with sheet metal roof. Would there be any danger of damage to the cable from lightning striking the roof, if the cable passes within two feet of the roof?

A. If the metal roof is properly protected, in accordance with the Code for Protection Against Lightning (National Bureau of Standards Handbook H40), there is little danger of a direct lightning stroke to the barn jumping to the cable. If the roof is not properly protected, it is advisable to maintain as much separation of the cable from the roof as possible (at least six feet) and at the same time to bond the cable sheath to the messenger. (This precaution is not necessary, if the cable is tightly lashed to the messenger by the spinner method or by means of metal straps.) The messenger should also be grounded, unless a ground is already provided through down guys and anchors close by.

◆

Q. In a dial system, when two subscribers are conversing together, their lines are made busy to other people attempting to contact one or the other subscriber. These two people have no way of knowing when someone, with urgent business, is trying to reach him. Have the manufacturers of dial equipment developed some kind of a tone that will indicate to these subscribers that there is someone trying to call them?

A. We have often wondered why no special tone has been developed to indicate that someone is trying to call a subscriber, whose line is in use at that moment. It seems to us that some arrangement could be made whereby the busy tone is transmitted back over the busy line, whenever someone attempts to contact one or the other busy subscriber. This tone should be reduced in volume and interrupted, in such manner so as not to interfere with the conversation of the subscribers using the line, and should be made audible only when someone is actually trying to get in touch with one or the other subscriber, possibly after a short interval. The subscribers, on hearing the tone, could choose to ignore the tone, or, by mutual agreement, hang up and wait for the other party to call one of them. We hope to see this revertive busy tone arrangement eventually developed and offered to the telephone trade.

◆

Q. The R.E.A. is coming into our territory. We have ground-return lines and have been advised to convert them to metallic, which would be very expensive to us. We wonder if there is some way to avoid this necessity.

A. Although it is true that it would be very expensive to convert from grounded to metallic lines, as you have been advised to do, it would be worth while in the long run. It has been the past experience of telephone companies that a ground-return line can never be free from noise induction, when it is paralleled by a rural power line. There have been many schemes tried out, but at best they have been only fairly successful. The usual result has been that lines have been finally converted to full metallic. A fully metallicized line, when properly transposed, can be free from noise and cross talk. It may be that you can employ long-span construction on most of your lines, thus reducing your construction costs to some extent. This type of construction, furthermore, has the advantage of standing up better under storm loads.

◆

Q. Would you recommend the use of Army telephone field wire as drop wire? We have a chance to get a large quantity of this kind of wire quite cheaply.

A. We do not recommend that you use Army telephone field wire in place of drop wire. This wire has very short life compared to standard telephone drop wire. In addition, it consists of four steel and three copper strands, both tinned which would make the wire difficult to splice by methods standard with telephone companies. Telephone drop wire has been greatly improved within recent years, particularly since the Neoprene and Polyethylene coatings were introduced. It is our opinion that it would be more economical in the long run to utilize a tried and proven product than to attempt to cut costs by using surplus war material of doubtful value.

◆

Q. We are using a ground return on both common battery and local battery lines. The crosstalk is very plain on the common battery circuits. The lines run through cable most of the way. How can we reduce the crosstalk?

A. When a ground return is utilized as part of the talking circuit in a telephone system, it is impossible to completely prevent crosstalk between the lines since the ground return is common to all lines. The amount of crosstalk varies with the resistance of the ground return and the difference in the lengths of the lines. The only effective remedy is to eliminate the ground return feature for the talking circuits and install fully metallic lines.

Free Help on Problems

IF YOU DON'T see a ready answer to your questions, let TELEPHONE ENGINEER'S staff of technical men tackle it for you. This is a free service. Your question and the resulting answer may not only solve your problem but help the many other telephone men reading these columns. Jot your questions on a postcard and look to LINE and DESK for reply.

No Matter
What the Weather,

★

We really — should
get together —

★

So that in an
emergency or when
real planning -- or
efficient construction
is desired --
We can be
at your service!

★

GUSTAV HIRSCH
ORGANIZATION Inc.

310-312 W. Broad Street
COLUMBUS 8, OHIO

SERVING YOU THROUGH SCIENCE

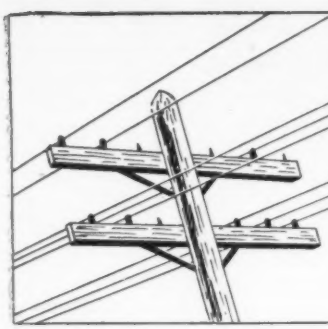
U. S. WIRES

FOR ALL
TELEPHONE NEEDS

- DROP WIRES
- BRIDLE WIRES
- INSIDE WIRES
- SWITCHBOARD WIRES
- FLAMEPROOF DISTRIBUTING WIRES
- INSTRUMENT WIRES
- FIXTURE WIRES

Specification Grades Only

UNITED STATES RUBBER COMPANY
1230 AVENUE OF THE AMERICAS • ROCKEFELLER CENTER • NEW YORK 20, N. Y.



TELEPHONE ENGINEER Handbook Tables

Index: Drop Wire Installation
Date: March 15, 1948

SUBJECT: Minimum Clearances of Drop Wire Runs from Other Wires or Obstructions - - - Methods of Protecting Wire Runs

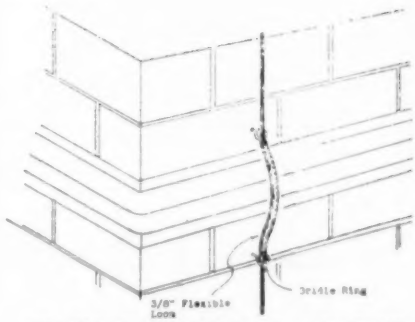
It is desirable that drop wire runs be installed at not less than the minimum distances shown in the following table:

Clearance of Drop Wire From:	When Crossing	When Paralleling
Down spouts* or gutters, iron conduit, and radio leads	2"	8"
Electric service wires run on building	4"	8"
Electric service wires in span (from drop wire span)	24"	12"**
Lightning rod wires	Do not cross at all.	6'0"

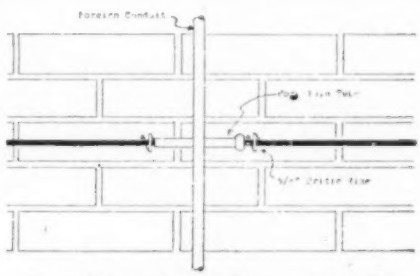
*If heavy ice formations are likely to occur, keep the drop wire at least 24 inches away from the down spouts, if possible.

**At attachment of service wires and telephone drop wire to building. This spacing should increase to a minimum of 24 inches between the spans at 15 feet from the building.

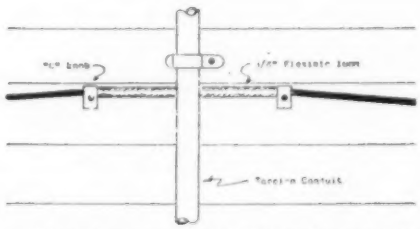
When it is not possible to obtain the minimum clearances for a drop wire run on the building from foreign wires and obstructions, the run should be protected with flexible loom or porcelain tubes, as indicated in the several illustrations on this page. It is desirable, of course, to reroute the wire run to avoid such obstructions whenever this is possible.



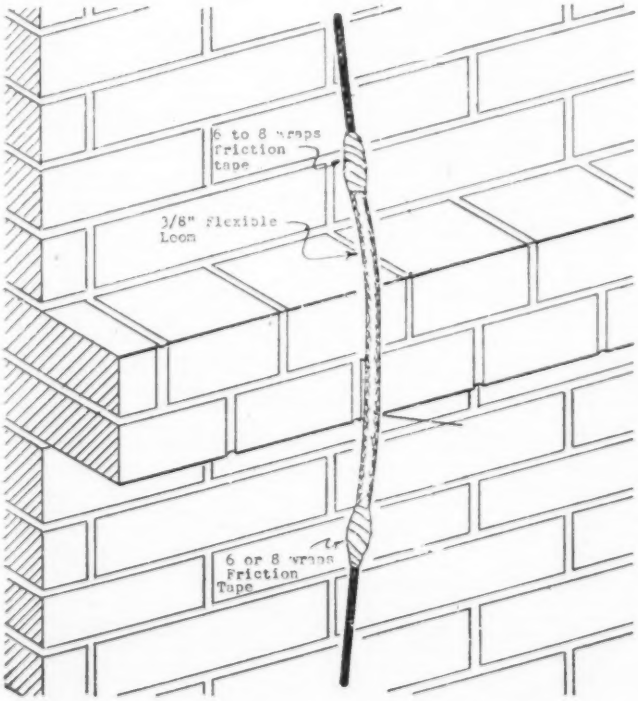
Flexible loom held in place by bridle rings used to protect drop wire from abrasion on building projection.



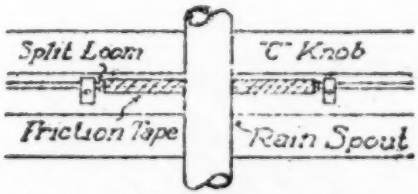
Porcelain tube used to protect drop wire run passing behind iron conduit.



Flexible loom and "C" knobs used to protect drop wires passing behind conduit down spout, or pipe on frame building.

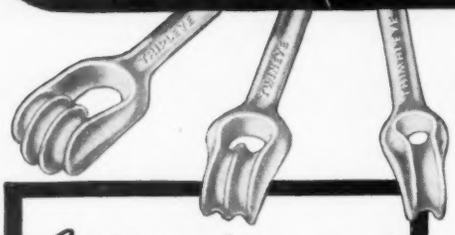


Flexible loom and friction tape used to protect drop wire from abrasion on cornice or building projection.



Using split loom to protect drop run that was installed before conduit or down spout was placed.

CHANCE Improved THIMBLEYE
Gives GREATER Protection to Guy Strand



FULL ROUNDED EYE . . .
No Kinking at Any Angle
GROOVED to Fit Guy Strand

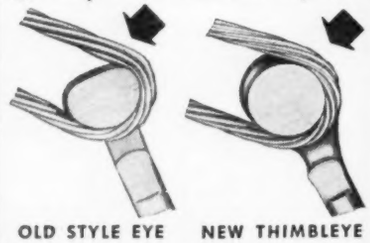
Chance Thimbleye Anchor Rods, and Guying Fixtures, the FIRST choice of users for many years, have recently been improved by Chance engineers. The redesigned eye forms a perfectly shaped "Thimble" and the sidewalls and groove of the eye extend around the head of the rod. This keeps the strand from flattening under tension, preserves its cylindrical shape and prevents it from kinking at any one point. The sidewalls of the groove are formed to fit snugly around the guy strand, preventing it from flattening under tension.

You will instantly see that the newly designed eye gives greater protection to guy strands than the old style eye.

The Improved Thimbleye is available in threaded rods, Never-Creep rods, and the complete line of guy fixtures.

For greater line security, specify Chance Thimbleye Anchor Rods and get this additional protection. Order through your regular source of supply.

Compare these eyes!



OLD STYLE EYE
Notice the strain placed on guy strand when used at angle with old style eye.

NEW THIMBLEYE
The new Chance Thimbleye *protects* the guy strand from strain at any angle.

C473-B

A·B·CHANCE CO·
CENTRALIA, MISSOURI · SAN FRANCISCO, CALIFORNIA
ABC INDUSTRIES

The Handy Hotel In Fort Worth

You get more than excellent living and cordial service at The Worth Hotel. You get convenience of location too.

You'll like being in comfortable walking distance of the places you'll most likely visit—such as:

Department Stores—3 Blocks Average
Banks—3 Blocks Average
Office Buildings—2½ Blocks Average
Medical Arts Building—3 Blocks
Theatres (First Run)—1 Block

Please write, wire, or phone for reservations—and allow us time for confirmation. If your plans are changed, please release your reservation.

JACK FARRELL
Manager

The Worth Hotel
Aglow with Western Hospitality

Wilson Elected A.T.&T. Pres.; Gifford Now Chairman

Leroy A. Wilson was elected president February 18 of the American Telephone & Telegraph Company, succeeding Walter S. Gifford, who was elected chairman. Mr. Wilson also was elected a member of the board. Charles P. Cooper was made vice chairman, a newly created office.

Mr. Gifford, 63 years old, who becomes the first chairman since 1928, had been president since 1925 and has been with A. T. & T. since 1910. Mr. Wilson had been vice president since

LEROY A. WILSON

1944 and financial vice president since 1946. Mr. Cooper became vice president in 1944 and executive vice president in 1946.

Mr. Gifford began as a clerk in what has become one of the largest corporations in the world. After having been graduated from Harvard, where he finished a four-year course in three years, he joined the Western Electric Company at a salary of $10 a week.

Mr. Wilson was graduated from Rose Polytechnic Institute in 1921 with a B. S. in civil engineering. His first job with the telephone company was during a summer vacation in 1919 as timekeeper with a construction crew, a job that helped to provide the funds to keep him in college.

He began his continuous telephone career on June 1, 1922, as a traffic clerk. He held various jobs in the traffic department of the Indiana Bell Telephone Company until he became traffic superintendent at Indianapolis in 1927.

Mr. Wilson was transferred to A. T. & T., New York, in 1929, and was made general commercial engineer in 1942. Two years later he was made vice president.

MEREDUC
TRADE MARK

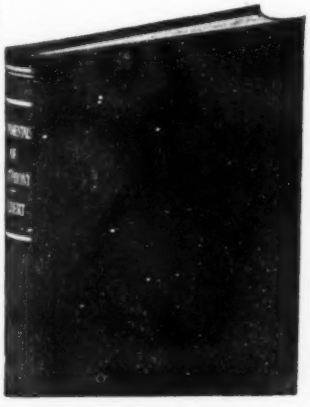
PRESSURE TREATMENTS of Southern Pine Poles, Crossarms, Conduit, Cover Plank, Ground Wire Moulding with No. 1 Creosote Oil or Pentachlorphenol are carried in stock permitting prompt shipments of carload and less than carload orders. Mailing address: P. O. Station "A", Atlanta, Ga.

WILLIAM C. MEREDITH COMPANY, Inc.

Treating Plant: East Point, Ga. — Mailing Address: P. O. Station "A", Atlanta, Ga.

A Simple, Up-to-the-minute Guide to Telephone Fundamentals

to give you the groundwork you need for best results in practical work



This first new telephone book in years tells how modern telephone systems operate, giving the electrical theory and the technical information on equipment and circuits that will be most helpful as a foundation for the non-engineering worker in telephone installing, servicing, etc.

FUNDAMENTALS OF TELEPHONY

374 pages, 5½ x 8½, 200 illustrations, $3.75

This book provides the telephone worker with an understandable treatment of the technical aspects of his work, valuable as a key to better results and improved skill in any job he may undertake. The fundamentals of electricity and acoustics are covered, followed by a full elementary treatment of telephone equipment and circuits, their elements, characteristics, functions, etc., illustrated by many numerical examples.

Order direct from

TELEPHONE ENGINEER PUBLISHING CORP.

7720 Sheridan Road **Chicago 26, Illinois**

INVEST YOUR "PIN MONEY" IN THE BEST

LOCUST PINS

Locust wood is practically impervious to decay and is impenetrable to moisture. Because of its close-grained hardness locust can be machined into strong, long lasting pins of standard specifications that can be counted on to retain their size and shape.

OAK BRACKETS

Oak pole brackets of unquestioned quality are in demand now as never before in the face of the qualifications necessary in the equipment and materials needed today to "keep 'em talking." Present day maintenance and repair have every reason to demand and get only the best.

GLASS INSULATORS

Research and experiment have produced in Hemingray insulators a glass insulator that is better than any ever before offered.

Non-porous, non-deteriorating, uniform coefficient of expansion and high mechanical as well as high dielectric strength are some of the many qualities that rank Hemingray the "best on the line."

BUCKEYE TELEPHONE and SUPPLY CO.

COLUMBUS 6, OHIO

Cable Fault Location Techniques

(Continued from page 34)

can then generally be found by inspection. This method is never recommended except in connection with old cable plant which is in such bad condition that ordinary fault methods will not work. Old cables which are in bad condition often have several faults in the same cable which makes it difficult to use the bridge or tone methods. Hence, as a last resort, in order to restore a cable to working condition, the Sectionalization Method is sometimes justified. These cuts should be kept to minimum. The first test cut should be made at the mid point of the cable known to be at fault and after determining the direction in which the fault lies, make further test cuts at the midpoints of each remaining section untill the fault is located or until the search is narrowed down to a small section of cable where the sheath break can usually be found by inpection.

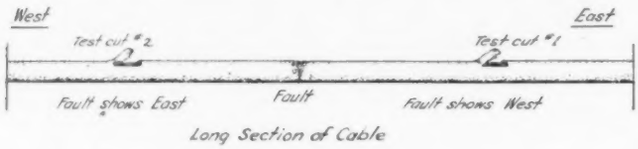


Fig. 8—Location by selectionalization.

Tone Induction Fault Location Method

THE MOST popular of the several fault location techniques is the *tone induction method*. It consists in sending a *tone or tracer current* over the cable wire at fault. This a-c current sets up an electromagnetic field around the bad conductor between the point at which the tone is applied and the fault location. This electromagnetic field around the faulty conductor is picked up by an *exploring coil* held against the sheath and the voltage developed in the coil creates an audible response in a telephone receiver. Theoretically, zero tone should be picked up beyond the fault, thus indicating its location.

The tone induction method is simple to use, and requires no mathematical computations. It is subject to the disadvantage of not working in all cases and particularly with high resistance type faults. It is also open to the objection that with certain types of faults it may give false indication. The old style high level tone generators, are prone, to "noise up" the working pairs.

General Features of Tone Induction Methods

THERE ARE two basic equipment arrangements used in locating faults by the tone induction method. These are: (1)—The *audible tone unit*, (2)—*The visual tone unit.* The audible tone arrangement consists in applying an alternating current to the pair or wire in trouble and picking up this tone by means of an exploring coil. The usual tone generator consists of a buzzer interrupter using No. 6 dry cells as the current source. Different makes of tone generators vary with respect to the fundamental frequency employed. But the output frequency is generally from 45 to as high as 80 cycles per second. The buzzer type tone generators have a very rich harmonic output which means that frequencies well up into the voice range are responsible for the tone picked up by the exploring coil. Some of the tone generators employ a slow speed interrupter to give a "buzz-buzz-buzz" tone which is easier to detect than a continuous tone.

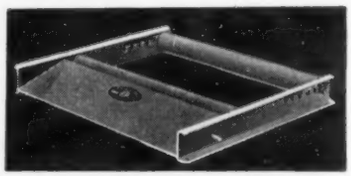
Buzzer type units are characterized by a rather high output level and this coupled with their strong harmonic output may make them a source of "crosstolk noise" in telephone cables. The tone may even interfere with the operation of carrier systems. The use of "buzzer type sets" is not recommended on cables which carry important long distance circuits and particularly if the cables carry radio program pairs.—*To be continued.*

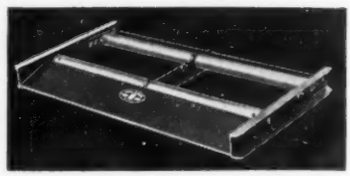
Continue this timely and helpful series in the April issue of Telephone Engineer and Management.

STROMBERG-C

roll-a-reel

handles heavy reels quickly, economically, and safely





STYLE A (top) Width 30″; Depth 28″; Height 3½″. Weight, 50 lbs. Capacity, 2000 lbs. Supports up to one 28″ wide reel.

STYLE B (below) Width 52″; Depth 28″; Height 4″. Weight, 110 lbs. Capacity 4000 lbs. Supports two 24″ wide reels or up to one 48″ wide reel.

- Sturdily built, with heavy gauge steel frame to roll reels of wire, cable, steel strand or ropes.
- Separate sets of rigidly aligned ball-bearing rollers for each side of the large reels. No slipping or friction between rollers and reel.
- Ball-bearing rollers are at same level, so that cable can be safely taken from front or back, top or bottom.
- Amazingly low cost.

STROMBERG-C

BRANCH OFFICES: CHICAGO ANSAS C

RG-CARLSON Recommends

sub-cycle ... *Superior Ringing Converter*

The Sub-Cycle "Master" Ringing Converter provides a powerful ringing current entirely independent of frequency variations in the commercial power supply.

Economical and quiet in operation, this exclusive development in an *alternating current* Power Ringing Converter causes no radio reception interference. There are no moving parts, and nothing to lubricate. Thus, the "Master" requires no routine maintenance. It is available in several models suitable for every use from P.B.X.'s to large central offices, requiring outputs of 7½ to 45 watts.

MASTER

"THE CHOICE OF THE TELEPHONE INDUSTRY"

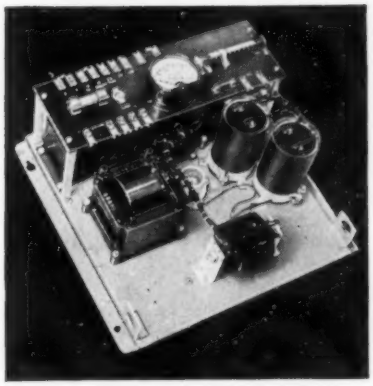
cook type 0 *sub-station protector*

This single circuit protector, equipped with fuses and lightning arresters, is unexcelled for either indoor or outdoor use. Special Cook-engineered features include:

1. Heavy white glazed porcelain designed to prevent surface leakage between current-carrying parts.
2. Tru-Gap high-potential dischargers that will not ground the line.
3. Phosphor bronze fuse and arrester springs, zinc hood, Everdur studs and washers. Hood is grounded when in place.
4. Choice of types and lengths of Cook Telephone Fuses.

. . . bigger savings plus better service with

raytheon rectifilters!



RFR 1044-E RECTIFILTER
WITH COVER REMOVED

For more than a decade, leading independent telephone companies have found that Raytheon Rectifilters are the most economical and efficient way to supply steady DC power to PBX boards directly from an AC source.

With no moving parts, the Raytheon Rectifilter requires neither adjustment nor maintenance. It will outlast many sets of batteries, release wires carrying charging current from central office to subscribers' PBX boards for revenue producing service, and minimize power cost because of high efficiency in converting from AC to DC.

Dry disc rectifying units and other components are designed for long-life, trouble-free service. The Raytheon Rectifilter will end your telephone power problems. Just plug it in, close the door—and forget it!

RG-CARLSON FACTORY, GENERAL OFFICES: ROCHESTER 3, N. Y.

GO · ANSAS CITY 8. SAN FRANCISCO 3. IN CANADA: STROMBERG-CARLSON COMPANY LTD. TORONTO

STROMBERG Telephone CARLSON

you... **can watch a storm comfortably when**

Amerstrand

...holds your lines!

When spring storms tear at your lines, you can depend on hot-processed Amerstrand. Here is strand with ductility and toughness capable of withstanding the most exacting torsion tests, and in addition the bonded zinc coating will not flake or crack under severest service conditions. You can watch storms come and go without concern when your lines are carried by Amerstrand.

RECOMMENDED AND DISTRIBUTED BY

AUTOMATIC ELECTRIC
SALES CORPORATION

1033 WEST VAN BUREN STREET, CHICAGO 7, ILLINOIS

★ Book Reviews ★

ELECTRICAL INSULATING MATERIALS; Published by American Society For Testing Materials, 1916 Race St., Philadelphia 3, Pa.; 580 pages; price $4.00.

THE 1947 COMPILATION of A.S.T.M. Standards on electrical insulating materials aggregates 580 pages; gives some 90 specifications and tests covering a wide range of materials in this field.

There are groups of specifications or tests on the following: Insulating Varnishes, Paints and Lacquers, 7 tests; Plates, Sheets, Tubes, Rods, and Molded Materials, 9 specifications, 28 tests; Mineral Oils for Electrical Insulation, 9 tests; Ceramic Products (Glass, Porcelain, Steatite), 2 specifications, 4 tests; Solid Filling and Treating Compounds, 2 tests; Insulating Fabrics, 2 specifications, 3 tests; Insulating Papers, 3 tests; Mica Products, 1 specification, 3 tests; Electrical Tests, 6 tests; Rubber Products, 4 specifications; Textile Materials, 10 specifications; Miscellaneous, Servicing Units, Conditioning, Value Test, 2 specifications, 3 tests.

In addition to these standards there is an appendix discussing the significance of tests of these materials, and information on the scope and personnel of A.S.T.M. Committee D-9, which sponsors the publication. A detailed index completes the book which is available in paper cover from A.S.T.M. Headquarters.

• • •

MODERN ULTRA- AND EXTREME-SHORTWAVE RECEPTION, by M. J. O. Strutt, Electrical Engineer, Doctor of Technical Science Electronics Consultant in Charge of Commercial Engineering of Electronic Tube Division of N. V. Philips' Gloeilampenfabrieken. Published by D. Van Nostrand Co., Inc., 400 pages; illustrated; price $7.50.

ALL THE fundamental information needed in the design of radio receivers has been gathered into this thoroughly up-to-date book. It shows the great range of peace time applications of high frequency, very high

frequency, ultra high frequency, and super high frequency (micro-wave) radiations—covering the entire frequency range from six megacycles to thirty thousand megacycles (fifty meters to one centimeter in wavelength).

For all the radio receiving equipment in this entire range it furnishes basic design information, including much hitherto unpublished and original work, to provide complete data for every design problem.

At every point in the application of basic principles to practical design, the author gives you the benefit of his exceptionally broad experience. He has been actively engaged in research and design in this field for more than twenty years, working for Philips' Manufacturing Company of the Netherlands. During this period his own contributions to the science have been reflected in many articles throughout the literature and in numerous patent specifications. In this book he furnishes in full detail all the information necessary in practical present-day receiver design, based upon his own familiarity with all types of receivers.

• • •

FLUORESCENT LIGHTING MANUAL, by Charles L. Amick; 318 pages; 210 illustrations; 54 tables. Price $4.00. Published by McGraw Hill Book Co., 330 W. 42nd St., New York City.

IN THE new 2nd edition of this standard manual Mr. Amick presents the latest information on new types and sizes of fluorescent lamps, auxiliary equipment improvements, recent lighting techniques.

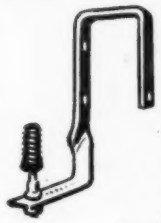
The book is a complete and practical manual on fluorescent lighting, supplying the most up-to-date and authoritative information available on construction and performance of all types of fluorescent lamps. The manual presents the principles and methods of calculating illumination requirements and designing luminaires and installations, methods of installing and maintaining fluorescent lamps, and of remedying their troubles.

This new second edition of a highly successful manual contains much valuable new material, such as: data on the new Slimline and Circline fluorescent lamps; explanation of the fundamental factors in fluorescent lamp design and of the new glare rating system.

Ten chapters supply complete information on: The fluorescent lamp; auxiliary equipment; operating characteristics; installation hints; service suggestions; luminaire selection; fluorescent lighting design; color quality; fluorescent applications, and lighting economics.

GraybaR
TELEPHONE SUPPLIES
BULLETIN

POLE-LINE HARDWARE



For your pole lines, you want hardware that will help assure uninterrupted service over the years — and you want to obtain the right items the easiest way. Graybar can meet both your wants. We distribute Hubbard hardware—skilfully designed and carefully made for long, trouble-free telephone service. Our near-by warehouse is a convenient source of this dependable hardware.

...AND INSULATORS

Via Graybar, you can get the highest quality of glass or porcelain insulators, porcelain spools, knobs, tubes, and guy-strain insulators. To avoid delays due to supply shortages, outline your plans to our local representative now; he'll schedule deliveries to fit in with them. And remember — your Graybar Outside Construction Specialist is qualified — and anxious — to help you solve any pole-line problem. *Graybar Electric Company. Executive offices: Graybar Building, New York 17, N. Y.* 4820

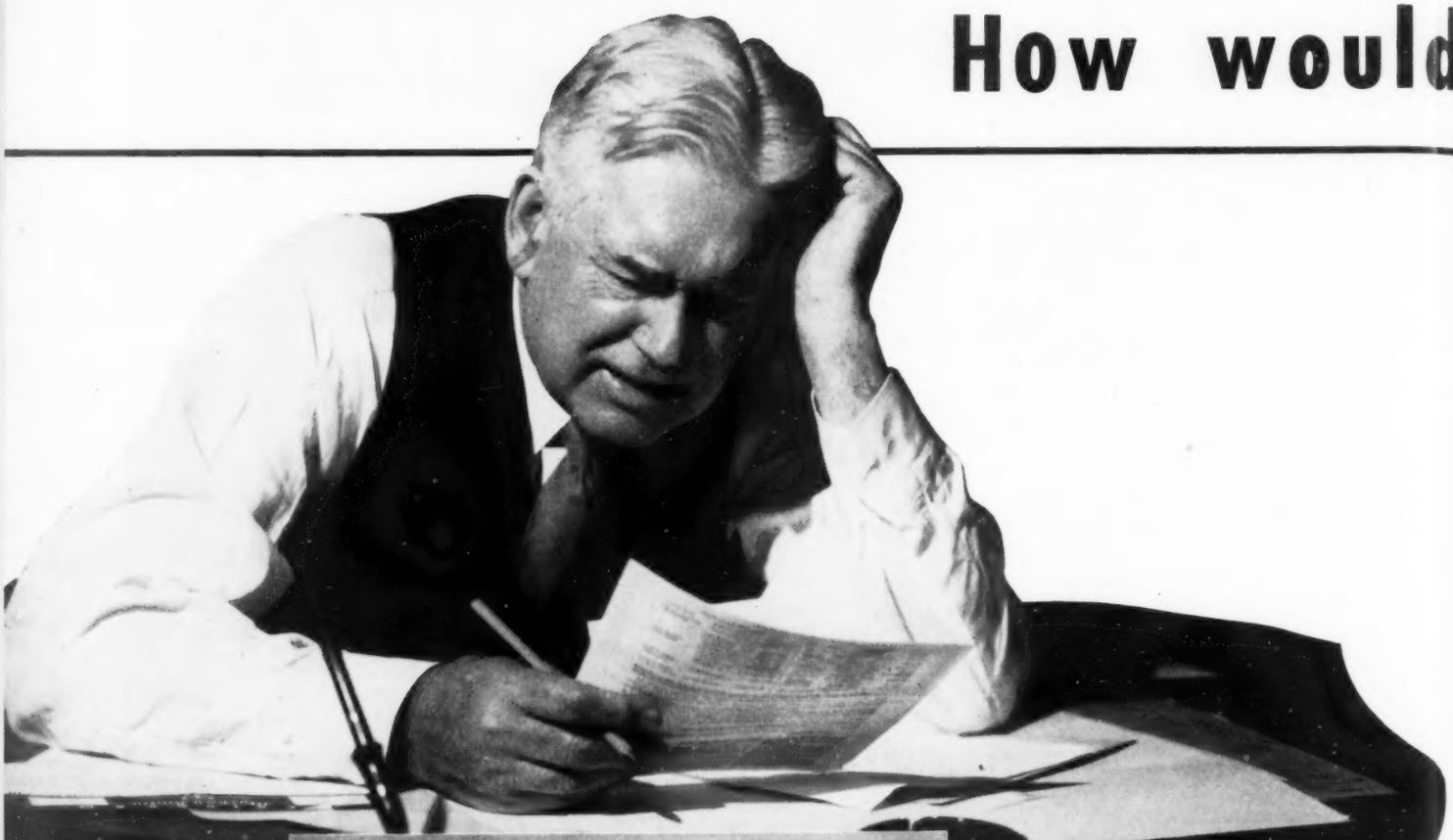
EVERYTHING IN TELEPHONE SUPPLIES via GraybaR

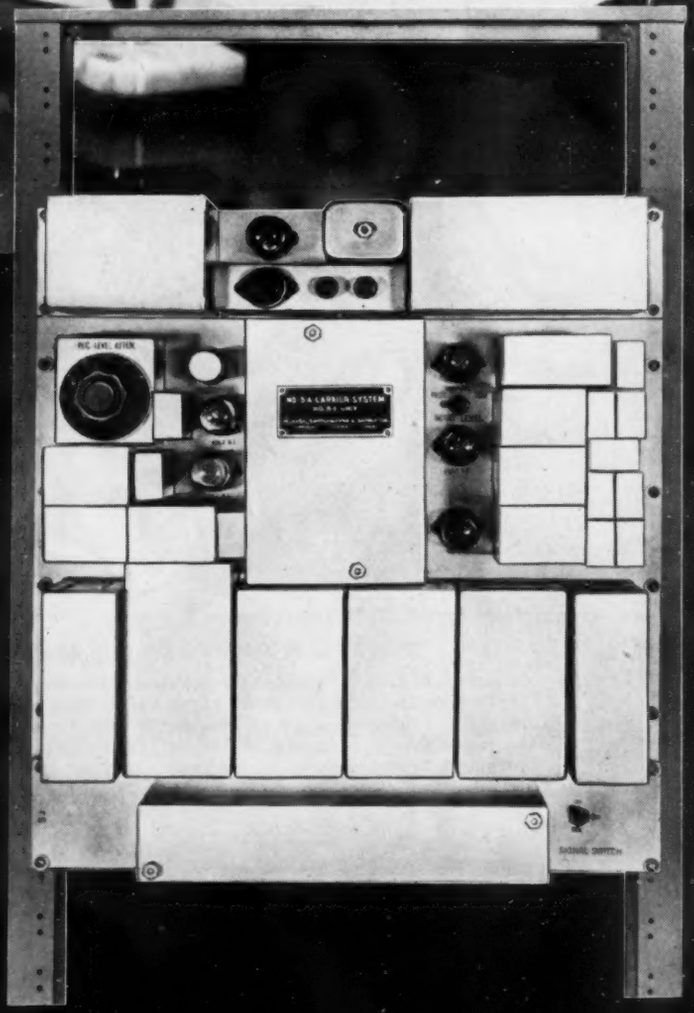
IN OVER 100 PRINCIPAL CITIES

IT'S GOT TO BE GOOD TO GO "VIA GRAYBAR"

Hundreds of different telephone supplies and equipment are distributed by Graybar. In many classifications, we handle two or more competing makes. But Graybar selects for distribution *only* items which are made by reputable manufacturers and which have thoroughly proved themselves in actual service. Be confident that any item you get "via Graybar" will do its job well.

How would Y





TECHNICAL DATA:

The Kellogg #5-A Carrier will operate over a circuit 30 db long (measured at 11-KC) and provide a 6 db talking circuit. This is equivalent to more than 250 circuit miles of .104 copper wire. Conversion from ring-down trunk to dial trunk via the carrier channel requires only a substitution of the signal units. Adding a second carrier channel requires only a few external connections. Kellogg #5-A Carrier Equipment can be used to provide an additional ring-down trunk, dial trunk, or rural line; can be used with or without manual or automatic central office equipment.

d YOU solve these problems?

1. To Increase Toll-Line Facilities and Revenue

2. To Avoid the Expense of Additional Costly Toll-Lines

KELLOGG CARRIER

Provides the Solution by Making One Circuit Do the Work of Two!

Double toll-line facilities, increased revenue *without* extra lines—that's what the Kellogg #5-A Carrier gives you! It's a single-channel system which permits transmission of two conversations over a two-wire circuit at the same time. That means big savings, when you figure what it would cost to expand your facilities by adding as little as 8 miles of .104 copper line wire.

The Kellogg #5-A Carrier gives you improved transmission, too! It's free from interference caused by power line induction frequently present on wire circuits. So simple to install — only 8 external connections to make, and it mounts on any 19" rack. And so easy to operate! One dial controls voice output level, and a simple switch controls the carrier output level to the line. All other adjustments are pre-set at the factory. Occasional replacement of a vacuum tube is practically the only maintenance it ever requires.

Kellogg Carrier equipment is built with rugged, telephone-type components, and incorporates advanced circuit design. That assures you of maximum life and trouble-free operation. Contact your Kellogg representative for complete details *today!*

1897 1947 Fifty Years of Service and Progress

BUILT BY TELEPHONE MEN FOR TELEPHONE MEN

KELLOGG CARRIER

KELLOGG SWITCHBOARD & SUPPLY CO.

6650 SOUTH CICERO AVENUE • CHICAGO 38 • ILLINOIS

Bell System's '47 Net Drops; New Financing Sets Record

CONSOLIDATED net income of the American Telephone & Telegraph Company amounted last year to $161,188,623, equal to $7.66 for each of the 21,034,761 common shares outstanding, compared with $208,551,507, or $10.23 a share in 1946, when 20,384,750 shares were outstanding, according to the company's annual report.

The $47,362,834 decline in income was largely the result of strikes in the second quarter of the year and increases in wages and other expenses "before increases in telephone rates were approved by regulatory authorities," according to Walter S. Gifford, president.

Mr. Gifford said that at the close of 1947, earnings of the Bell System, which consists of A. T. & T. and all subsidiaries, were at a rate better than for the year as a whole, which was more than $9 a share. Of the Bell System's earnings of $10.23 a share in 1946, 73 cents were due to tax credits.

A. T. & T. alone had a net income of 156,344,4238, equal to $7.43 a share, compared with $191,932,110, or $9.42 a share in 1946.

Heavy New Financing

ONE of the major developments in a year of unprecedented activity in the system was the raising of more than $1,100,000,000 of new capital, the largest amount ever raised in a single year by the system for expansion.

Of that amount, $357,532,600 was obtained by the sale to stockholders of 10-year 2¾ per cent debentures in November. In March and June $400,000,000 of 2¾ per cent and 2⅞ per cent debentures, due in 1982 and 1987, were sold by the parent company, and other long-term debt obligations were marketed by subsidiaries.

As a consequence of these operations, the proportion of funded debt in the system's capital increased from 38 per cent to about 49 per cent. Nearly one-fourth of the debt is convertible into stock of the parent company.

"The effect of conversions," Mr. Gifford declared, "is to reduce debt obligations by the amount of bonds converted and to increase equity capital by a large amount due to the cash premiums paid in. Complete conversion of the bonds would reduce the proportion of debt capital to about 36 per cent."

During 1947 expenditures for new construction were $1,185,000,000, compared with $690,000,000 in 1946 and $255,000,000 in 1945. Over two-thirds of the money was spent for exchange plant construction, including installation of equipment. The rest went into additional toll and long-distance plant.

Plant Investment Soars

THE investment in plant increased $1,054,384,000 during the year to $7,348,803,000. Depreciation and amortization reserves were $2,380,466,000, or 32 per cent of the plant investment.

The vastness of the expansion program under way is indicated by the fact that it took about 40 years for the Bell System to build its network to 6,000,000 telephones. Since V-J Day, the number has increased by more than 6,500,000. At the end of 1947 28,500,000 telephones were in service—30 per cent more than when the war ended and more than twice as many as twelve years ago.

Telephones In Service Gain 30% Since War's End

DURING 1947 the system was able to take care of 81 per cent of the 2,000,000 applications that were on hand at the beginning of the year. More than three-quarters of the 4,500,000 new applications received also were fiilled. So great was the new demand that about 1,500,000 applications for telephones, most of which were received during 1947, were still unsatisfied at the end of the year.

More than 4,000 vehicles now use mobile telephones service in seventy-one cities the report states. This service was introduced in 1946. Rural telephone increase last year exceeded 300,000 installations, making the total number of telephones in such areas more than 2,000,000, or 45 per cent more than when the war ended.

Number of Employees Increase 45,935

COAXIAL CABLES and new radio relay systems, both designed to carry television programs, as well as telephone conversations, have been installed along 6,000 miles of route and more are under construction.

Emloyees in the Bell system, including the Western Electric Company and the Bell Telephone Laboratories, numbered 663,089, an increase of 45,935 over the number in 1946.

STROMBERG-C

Insure
dependable service with

DIAMOND C POLES

Mfd. by Colfax Lumber & Creosoting Company, Inc.

COLFAX Creosoted Yellow Pine Poles are carefully graded according to physical properties desired and treated with 8 lbs., or more if you wish, of Grade No. 1 Creosote Oil in accordance with AWPA specifications.

Each pole is treated full length under pressure with the finest and cleanest creosote oil obtainable. Reduce losses in revenue due to pole failures—specify:

DIAMOND C

Creosoted Yellow Pine Poles

STROMBER(-C

BRANCH OFFICES: CHICAGO NSAS CI

RG-CARLSON Recommends

hold that line . . . *with* chance *steel expanding anchors!*

The Chance unbreakable Steel Expanding Anchor has a larger percent of its total area in solid earth than any other expanding anchor. Before you specify new anchors, check these outstanding Chance features:

- Rigid construction of tough, heavy-ribbed steel eliminates possibility of breakage.
- Blades rigidly fastened to expanding arms and grooved to conform to ridges in housing and base plate for accurate expansion.
- Expansion in opposite directions, assuring equal distribution of pull and eliminating side twisting.
- Drop forged steel driving head.
- Patented destructible nut retainer aids installation by preventing anchor from riding up rod. Rods can be salvaged or driven down if anchor is abandoned.
- Easy installation in any position, at any angle.
- Lifetime endurance with maximum strength for top economy.

nicopress reducing sleeves *for pull-proof reducing splices!*

Splicing two wires of different sizes can be an uncertain job. But with *Nicopress* Reducing Sleeves you can be sure that the splice is made to stay—every time.

Making a splice with *Nicopress* is a simple matter. Just clean the conductors, slip them in the reducing sleeve, compress the sleeve with the *Nicopress* Tool, and the job is done.

For splices of all kinds, easy to make—hard to break—specify *Nicopress.*

crapo galvanized strand *Guy and Messenger*

LONG LIFE — LOW COST

The superior tensile properties inherent in steel are used to full advantage in *Crapo* Galvanized Strand. The tightly adherent zinc coating applied by the *Crapo* Galvanizing Process provides lasting protection against corrosion, prolongs the life of the strand. Controlled ductility makes *Crapo* Strand easy to work and to serve. Low first cost and low yearly cost result in important economies.

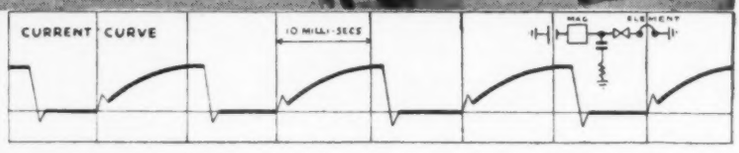
The all-round dependability of *Crapo* Galvanized Steel Strand is being demonstrated constantly by its outstanding performance in service. There is a size and grade for all practical needs.

RG-CARLSON FACTORY, GENERAL OFFICES: ROCHESTER 3, N. Y.

AGO NSAS CITY 8. SAN FRANCISCO 3. IN CANADA: STROMBERG-CARLSON COMPANY LTD. TORONTO

STROMBERG Telephone CARLSON

the STROWGER TYPE 32A SELECTOR



The Strowger Type 32A (B.P.O.2000) Selector is the greatest advance yet made in automatic telephone switching technique. To make evident certain of its qualities is the purpose of this announcement and others in the series which examine in detail its component assemblies.

To the telephone engineer, the oscillogram reproduced above, will reveal some of the merits of the Strowger power unit. It will show, for instance, that the current rise in the coil is rapid and that the magnet has sufficient power to drive a three-bank switch at a speed of approximately 50 steps a second. Performance such as this can, to a great extent, be attributed to the one-piece cast iron core. Eddy current losses are minimised owing to its comparatively high electrical resistance, while the elimination of unnecessary air gaps reduces reluctance. This latter factor is still further reduced by large pole faces and a generous cross section. Being a casting, the material can be disposed so as to give the best magnetic results and provide adequate heat conduction.

STROWGER TELECOMMUNICATIONS

fulfil the requirements of all communities—from the smallest to the largest

Automatic Telephone & Electric Co. Ltd., Norfolk House Norfolk Street, London, W.C.2
Temple Bar 9262. Cables: Autelco, London Strowger Works, Liverpool, 7, England

A7151/1-A2

USITA Washington Office

(*Continued from page 36*)

he was elected secretary and assistant treasurer.

As secretary, Mr. Ridings is responsible for obtaining new members, maintaining accurate up to the minute membership and mailing records, collecting dues and many other duties. He is also the statistician of the association and is responsible for the preparation and publication of the useful and excellently arranged

FLOYD RIDINGS, popular USITA secretary, joined the headquarter's staff in 1944.

annual statistical report which shows operations of Class A and Class B Independent telephone companies.

Mr. Ridings has conducted his work in a highly efficient and capable manner. He has brought into the headquarters office an expert knowledge of the accounting phases of the telephone business. The preparation of the annual statistical report requires an immense amount of work in the collection, analysis, and summarization of many reports of the Class A and B companies.

Among typical problems with which the association concerns itself are rising costs of labor and material, possible revision of the Fair Labor Standards Act, the question of changing the wage exemptions with respect to those employees that classify as executive, administrative and professional. The association has taken part in appearances before such groups as the Federal Communications Commission and has presented the needs of the Independent industry for adequate space on the radio spectrum for such radio-telephone services as urban and highway mobile, point-to-point toll, point-to-point rural, and other uses in which radio may supplement wire lines.

The association's working committees are composed of industry representatives whose knowledge and experience in the Independent field excellently qualify them for membership. The assistance which the committees render is extremely valuable to the association in its efforts to help in the solution of the many technical and commerical problems which arise and are of common concern to all companies.

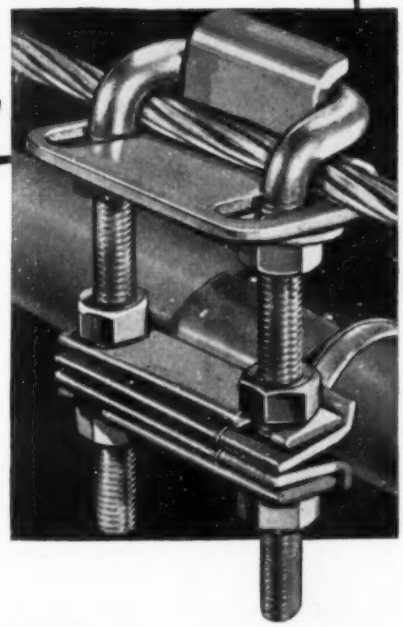
Not all of the officers of the association are located in Washington. The president of the association, elected annually on a rotating basis by the Board of Directors, performs the duties customarily appertaining to that office, along with his other duties which usually involve the managing or directing of the operations of a member company. The same is true of the first and second vice presidents of the Association.

Oscar Burton, president of U.S.I.-T.A., is located at Tyler, Texas where he is vice president and general manager of the Gulf States Telephone Company. Frank E. Bohn, first vice president of the association, is president of the Home Telephone & Telegraph Company, Fort Wayne, Indiana. Harold V. Bozell, second vice president, is president of the General Telephone Corporation, New York City. Carl D. Brorein, treasurer, is president of the Peninsular Telephone Company, with offices in Tampa, Florida.—THE END

Peninsular Company Completes Cutover to Automatic

The Peninsular Telephone Company, Tampa, Florida, one of the nation's largest Independents, has completed its changeover to full automatic operation. The Peninsular company, which now operates 108,000 stations, completed its first automatic conversion in 1915 when 6000 stations were cut over.

"Cable Slippage Ended-
When We Installed
KEARNEY
GRADE CLAMPS"



That's what all users of these efficient, economical clamps have said. Kearney Grade Clamps are adjustable to any spacing of the cables and the messenger. Long bearing surface, free from sharp edges, gives firm gripping pressure without injuring the cable. It's easy to install this one-piece unit because bolts and nuts are not taken apart for the placing operations. Available in single and double length clamps for either one or two cables.

JAMES R. KEARNEY CORPORATION ST. LOUIS, MO

For complete information and prices see your jobber — or write

JAMES R. KEARNEY CORPORATION
4236 CLAYTON AVE. • ST. LOUIS 10, MO.
Overhead and Underground Utility Equipment

Split-Minute Splices with Nicopress

The Nicopress way cuts wire-splicing time to split minutes. Simply clean the ends of the wire, slip on a Nicopress sleeve and compress with the Nicopress Tool. ***That quick,*** you have a splice that's air-proof, gas-proof and moisture-proof—actually stronger than the wire itself.

RECOMMENDED AND DISTRIBUTED BY

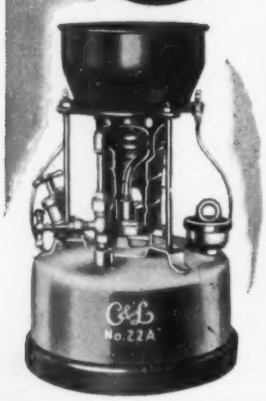
AUTOMATIC ELECTRIC SALES CORPORATION

1033 W. VAN BUREN ST., CHICAGO 7, ILL.

BUILT RIGHT FOR HEAVY SERVICE

C&L FIRE POTS

C&L TRADE MARK



C&L Fire Pots can take it! Rugged construction and quality materials add up to long life and smooth performance. For almost 60 years, C&L engineering skill and experienced workmanship have been building efficient, dependable fire pots. That's why good mechanics everywhere know C&L Fire Pots to be the best money can buy. Write for complete information and catalog today.

CLAYTON & LAMBERT MFG. CO.
1709 DIXIE HIGHWAY • LOUISVILLE 10, KENTUCKY

---

for Prompt Delivery on STANDARD OR SPECIAL CORDS

Go Commercial

If it's 2-conductor receiver cord
. . . 2-, 3- or 4-conductor sub-set cords
. . . 3-conductor hand set cords
. . . in fact, any type of telephone cord
. . . Commercial can give you prompt delivery.
In service, Commercial Cords will prove their worth on every count. So, next time you order subscriber or operator set cords, go Commercial. You'll get . . .

ECONOMY • QUALITY • SERVICE

Commercial Cord AND SUPPLY COMPANY, INC.
26 East Main Street
Clifton Springs, N. Y.

*Order by Code Number or Sample

Columbia Utilities Expansion Program Moves At Fast Pace

Columbia Utilities Company, Medford, Oregon, has completed installation of an automatic exchange at Shady Cove, Oregon. The new exchange will serve the Shady Cove, Trail and McLeod areas replacing magneto equipment, and service previously switched remote-control through Eagle Point. Approximately 125 stations will be served initially by the new exchange, but station development is expected to be increased to approximately 250 stations in the near future as fast as a large backlog of orders can be installed.

The company is also in process of completing installation of automatic equipment at its Bonanza and Lorella, Oregon exchanges. Conversion of these two exchanges is expected to be completed within the next 30 to 60 days. The Prospect, Oregon exchange will also be converted to automatic operation early this summer.

The California-Oregon Telephone Company, California affiliate of the Columbia Utilities Company, is in process of installing automatic service at Newell, California, in the company's Tulelake district. Newell is a former War Relocation Center for Japanese internees during the war, and is now the center of the veterans homestead area being thrown open by the government.

During the year 1947 the Columbia Utilities Company acquired the Oakridge and Westfir, Oregon exchanges, which have been combined into one common battery exchange at Oakridge. At the beginning of 1947, Oakridge had only 21 stations. This has now been increased to more than 300 stations, with a back-log of approximately 200 held orders. Big scale lumber and plywood developments in the area accounts for the growth in telephone service.

During 1947 the company salvaged more than 125,000 ft. of cable, many thousand feet of drop wire, and open wire, from its former army installations at Camp White, Oregon and the Japanese Relocation Center in the Tulelake area, both of which were served by Columbia Utilities Company. Approximately 1,200 modern dial telephones were also recovered from these operations. All of this material and equipment is now being reused by the company in its program.

During 1947, Columbia Utilities Company and its California-Oregon Telephone Company affiliate, expended approximately $125,000 in modernizing and expanding plant facilities, additional toll circuits and other improvements and additions.

use TELESEAL

SIGNAL and COMMUNICATION WIRE FOR UNDERGROUND INSTALLATIONS

May be had in No. 14 and No. 16 AWG

Low Cost Installation and Permanent Service

TELESEAL Identified by the blue label is a long service wire which may be installed in wet locations underground, without added protection for railroad signal or rural communication.

TELESEAL has a Whitney Blake Teleplated** hard copper conductor, a low moisture absorbing insulation, and a neoprene tire-tread type jacket over and adherent to the insulation.

Prices and Deliveries Obtainable From Your Nearest Graybar Office

CATALOG NUMBER
16TSC-1 SINGLE CONDUCTOR
16TSC-2 TWISTED PAIR
14TSC-1 SINGLE CONDUCTOR
14TSC-2 TWISTED PAIR

Distributed by GRAYBAR ELECTRIC COMPANY

* Reg. U.S. Patent Office

**Teleplate is a lead coating applied to the conductor to resist corrosion, and an electroplated brass coating over the lead, provides the adhesion of the insulation to the conducter.

THE WHITNEY BLAKE CO.
New Haven, Conn.
Well Built wires since 1899

As originators of Automatic telephones and switching equipment, Automatic Electric Company has earned world-wide acceptance of its products. Over 70 countries have standardized on Strowger Automatic equipment, pioneered by Automatic Electric and now offered through the facilities of the International AUTOMATIC ELECTRIC Group. Thanks to this record of service, users of Automatic Electric equipment are assured of the highest quality, and the finest standards of operating performance.

Wherever you are, Strowger Automatic equipment is available also to you, through the world-wide facilities of the International AUTOMATIC ELECTRIC Group.

International
AUTOMATIC ELECTRIC
Corporation

1027 WEST VAN BUREN STREET, CHICAGO 7, U.S.A.

AUTOMATIC ELECTRIC SALES COMPANY, S. A.
22 Rue du Verger Antwerp, Belgium

Export Distributors For:
AUTOMATIC ELECTRIC COMPANY, Chicago, U. S. A.
PHILLIPS ELECTRICAL WORKS LIMITED, Brockville, Canada
AUTOMATIQUE ELECTRIQUE, S. A., Antwerp, Belgium
AUTELCO MEDITERRANEA, S. A. T. A. P., Milan, Italy
and other manufacturers
Selling Companies and Agents Throughout the World

Indiana Meetings Stress Good Service, Rates

(*Continued from page* 48)

ous toll-center points inviting tributary office traffic personnel. These toll-center-tributary meetings were to be arranged and held at the discretion of toll-center managers.

The committee's final recommendation concerned a series of meetings for management and plant people to be arranged and conducted through the association's office. It was proposed that these meetings be held at small exchange points and in localities near the operating headquarters of individually-owned or cooperative companies; that the program presented should cover discussions of service, construction, maintenance, organization and management, and that the discussion leader should be, if possible, a member of the engineering staff of the Public Service Commission of Indiana. The committee also suggested that the association office ask the Indiana Farm Bureau to assist it in publicizing these meetings in those communities where a number of farmer-owned companies were in operation.

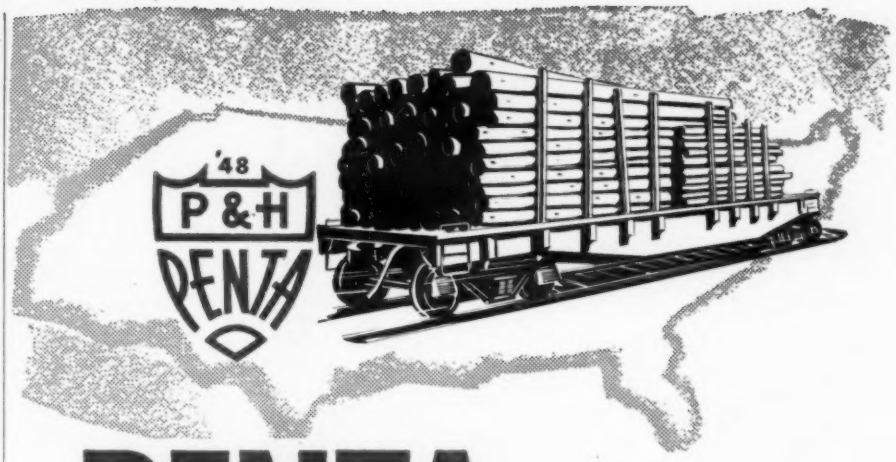
Committee Assists In Starting New Company

THE FIRST recommendation of the committee was put into operation early in the summer of 1947. The first work was to assist a group of citizens of a small community to establish a telephone company in a locality which had been without service for seven years.

Recommendations were made concerning the formation of a corporation, public service commission contacts, plant layout, types and amounts of equipment necessary, installation methods and financial requirements. Special emphasis was placed on the necessity of first class construction and equipment, adequate personnel, satisfactory financial structure and rates to provide income to meet all fixed charges as well as operating expenses.

Company officials were impressed with the fact that the above mentioned necessities must be properly coordinated and that a company will not be successfully operated unless all four items are properly indentified in the corporate structure. Last reports on the case indicated that all preliminary work was completed and construction under way.

Another case similar to the above,



PENTA POLES

They are pleasing in color — neat in appearance.

P&H

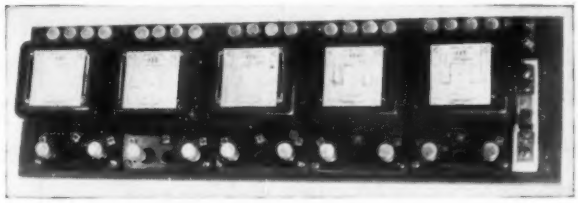
PAGE AND HILL CO.

MINNEAPOLIS, MINNESOTA · 50 CHURCH STREET, NEW YORK, N. Y. "STILL IN THE LEAD"

Distributed by AUTOMATIC ELECTRIC SALES CORPORATION · STROMBERG-CARLSON COMPANY

The Dan-Mac KICK COIL

for connecting Common Battery telephones to magneto switchboards provides modern private line service and more profitable revenue.



Strips of 5 coils ready for mounting with battery circuit wire and fused ..... per strip $23.50

Single coil ..... each $ 4.00

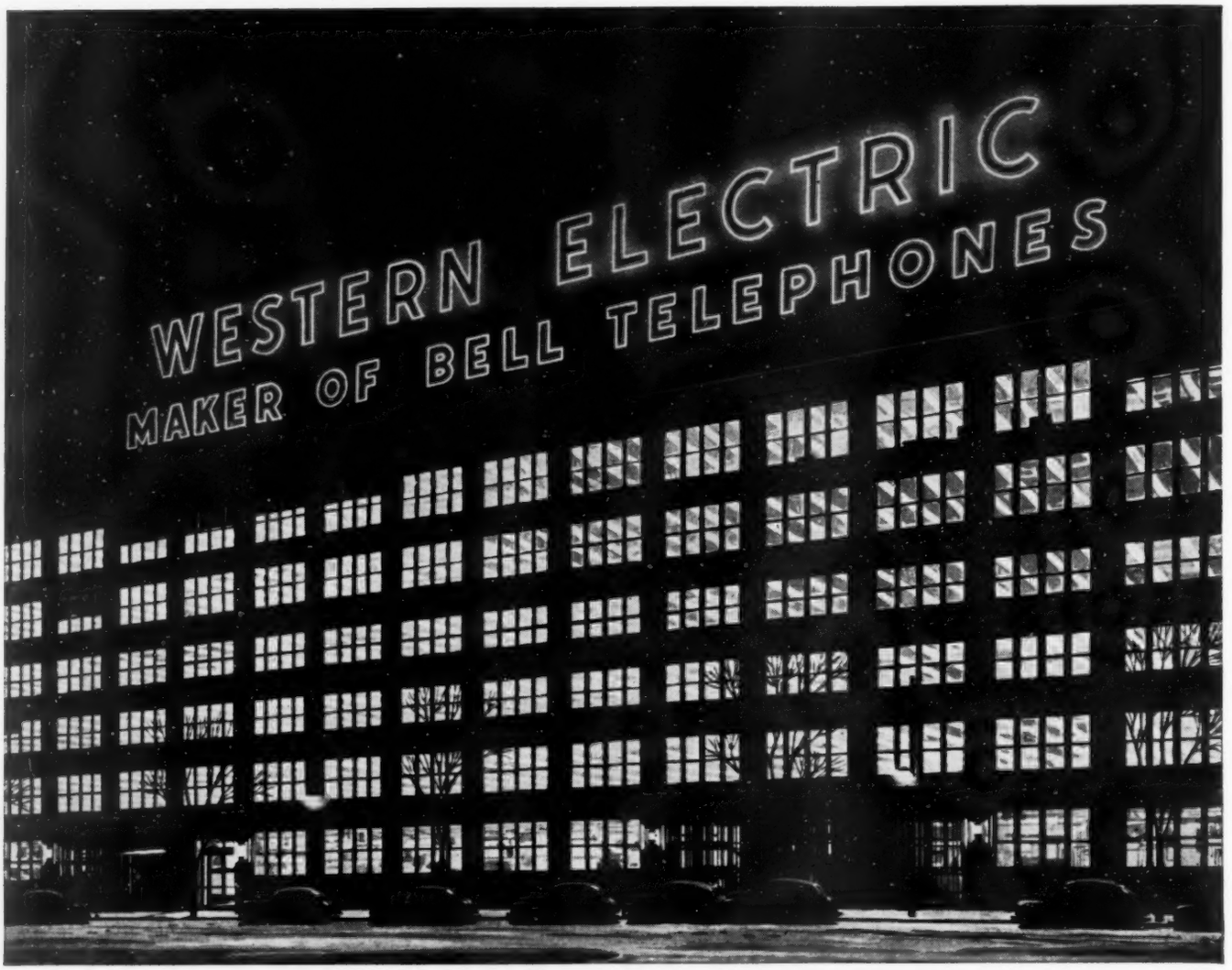
We also have a stock of new and rebuilt magneto wall telephones —Write for details.

SINCE 1926

TELEPHONE REPAIR & SUPPLY COMPANY

DAN'L H. McNULTY, President and Manager

1760 Lunt Avenue Chicago 26, Illinois



What's back of that name . . . for YOU?

Back of the name Western Electric are 130,000 men and women who help make your Bell Telephone service the *world's best*—at the *lowest* possible cost.

Where are they? What do they do?

They're in factories in 18 cities, making vast amounts of telephone equipment designed by their teammates at Bell Telephone Laboratories.

They're all over the map, buying all kinds of Bell System supplies from other manufacturers.

They're at 29 distributing houses, filling orders from Bell Telephone companies for apparatus and supplies.

More than 31,000 of them are in mobile crews installing intricate central office switchboards and equipment.

In doing this huge job—one of the most complex in industry—Western Electric people are contributing daily to the efficiency and economy of your Bell Telephone service.

MANUFACTURER... of 43,000 varieties of telephone apparatus.

PURCHASER... of supplies of all kinds for telephone companies.

DISTRIBUTOR... of telephone apparatus and supplies.

INSTALLER... of telephone central office equipment.

Western Electric

A UNIT OF THE BELL SYSTEM SINCE 1882

except that considerable more detail was involved which required the employment of an engineer to prepare plant layouts and bills of materials, was handled and that company will soon begin operations.

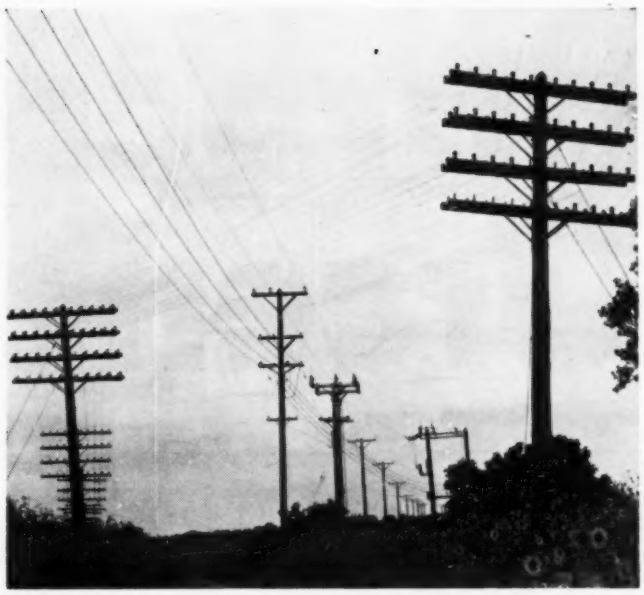
Rate cases were another important item and consultation was had with a number of companies relative to preparation and presentation of their cases. Engineering assistance was employed in drawing up plans and necessary materials for rehabilitation of a badly deteriorated plant. Work has been begun with a group of citizens in a locality where nine farmer mutual companies are in operation. Tentative plans call for the consolidation of the properties, rebuilding where necessary, operation by a central committee and maintenance and construction by crews of competent workmen. The association will provide complete engineering service for the job. Many other matters, minor in their nature, were disposed of by correspondence and telephone.

Toll Center Meetings Prove Successful

THE EIGHT TOLL center chief operator meetings were definitely successful. They were held at Muscatatuck State Park, Fort Wayne, Plymouth, Muncie, Lafayette, Indianapolis, Terre Haute and Evansville. One hundred and twenty-five chief operators, assistant chief operators, supervisors and traveling instructors attended and discussed ways, means and practices for improving toll service. A chief operator from a toll center in the area of the meeting place acted as chairman of the meeting in her locality.

At the completion of these meetings a questionnaire seeking information as to benefits derived from the meetings and suggestions for future meetings was sent to all attendants. Returns from a large majority of the questionnaires indicated that many benefits were derived from the meetings; that they should be held semiannually and that additional ground should be covered by inviting tributary chief operators to the meetings and discussing additional traffic subjects.

When arrangements were being made for the management-plant meetings, the entire plan and accomplishments hoped for were discussed with Leroy S. Yoder, chairman of the Public Service Commission of Indiana. Mr. Yoder believed that the plan had much merit and that the meetings should be quite helpful to the smaller companies in providing ideas on service improvements, modernization, good construction and maintenance. He instructed William E. Roby, senior engineer of the commission, to attend all meetings and present a program and conduct discussions which he felt would be helpful. The association's Service Committee felt quite fortunate in having Mr. Roby assigned to this work because of the vast experience he has had in all branches of telephone work.



Indiana meeting stressed factors of good plant construction.

Other preparations for the meetings included the making of slides for projection from photographs of telephone construction in Indiana. These pictures—used to illustrate points discussed in Mr. Roby's talk—were made in several sections of the state and included the construction of both large and small companies of both commercial and mutual types. The construction shown illustrated open wire cross arm and bracket leads, corner construction, tree trimming, cable suspension and distribution,

ALPHADUCT WIRES

FOR *All* TELEPHONE REQUIREMENTS

LONG LIFE

Neoprene Jacketed
Drop and Bridle Wire

Weatherproof Braided Drop and Bridle
Interior - Tree - Ground - Switchboard -
Pothead - Cable Terminal - Instrument

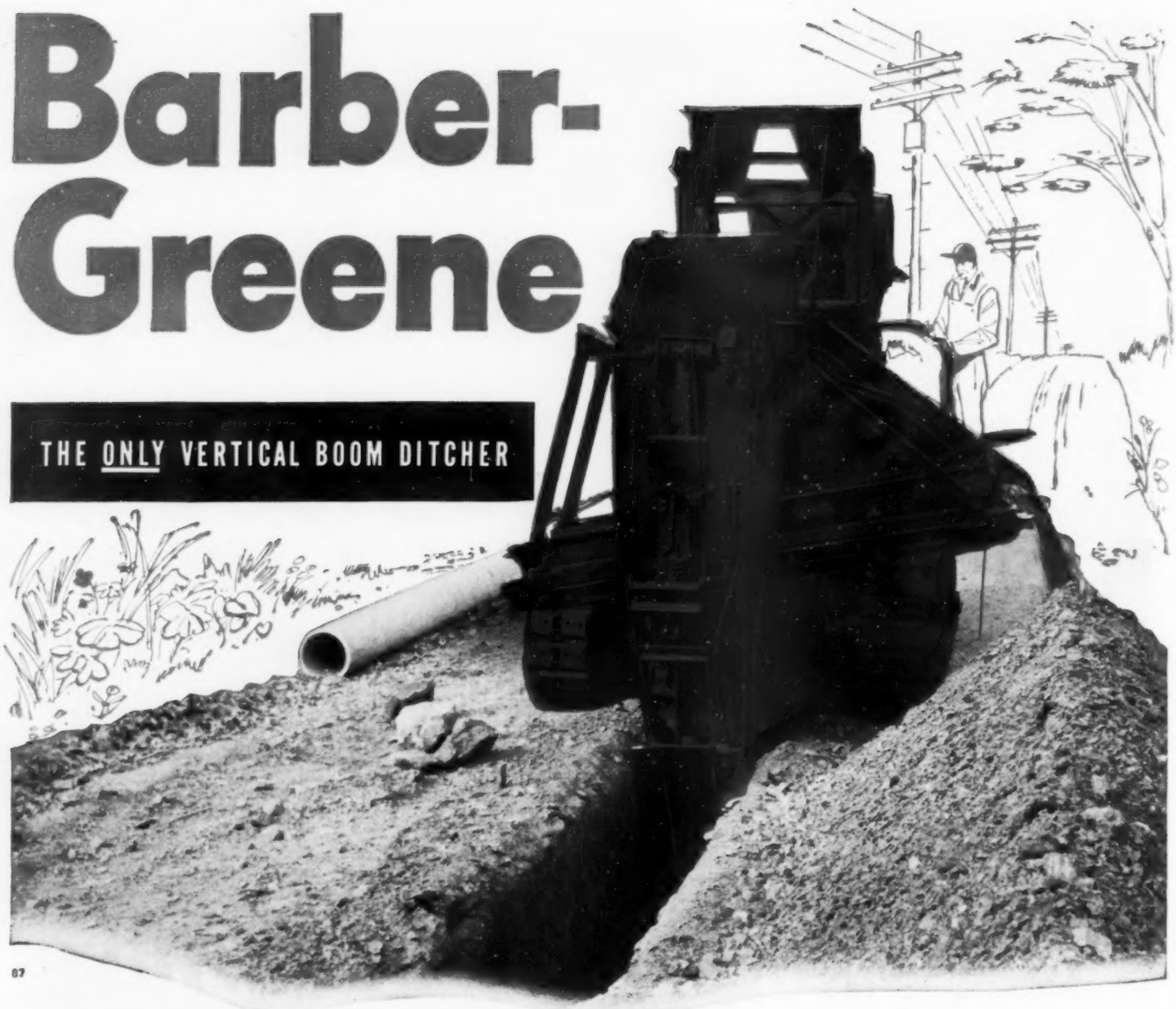
Manufactured and Tested to Rigid Specifications

ALPHADUCT WIRE & CABLE CO.

Milltown, New Jersey Telephone: Milltown 8-0030

Barber-Greene

THE ONLY VERTICAL BOOM DITCHER



digs clean—leaves no ramp • discharges on either side

Here's an exclusive ditcher feature that saves a lot of hand labor. The Barber-Greene's vertical boom digs *straight down*, right up to walks, foundations, underground piping and mains, etc. *There's no ramp to run up digging costs.*

Closely spaced, self-cleaning "kick out" buckets, traveling at high rate of speed, cut like a milling machine . . . leave a clean-walled trench. It's this efficient operating principle that gets the B-G Ditcher through materials as tough as coral rock — down to 8 feet, 3 inches; widths up to 24 inches. Feeding speeds range from 10 inches to 8 feet per minute.

An adjustable spoils conveyor discharges on either side, and the automatic overload release protects both the machine and hidden objects.

Find out how this compact, maneuverable, easily controlled unit can keep your trenching costs down . . . and what varied work it will perform.

BARBER • GREENE COMPANY, AURORA, ILLINOIS

Constant flow Equipment

LOADERS | PERMANENT CONVEYORS | PORTABLE CONVEYORS | COAL MACHINES | BITUMINOUS PLANTS | FINISHERS | DITCHERS

open wire joints, guying, aerial office entrances and other items.

Fifteen meetings were held in October and November at the following points: Thorntown, Forest, Delphi, Warren, Clayton, Markleville, Rushville, Marshall, Brazil, Sullivan, Newberry, North Vernon, Corydon, Boonville and New Harmony. Although the programs at these meetings were all of the same pattern Mr. Roby altered his remarks to fit his audience. Discussion also varied and were indicative of the problems occupying the immediate attention of the companies serving the meeting area.

Three hundred and five persons—directors, presidents, managers, linemen, trouble men and others—representing 111 different operating companies attended. Sixty-three of the companies were small cooperative, mutual or individually owned outfits operating, for the most part in rural areas. With few exceptions every representative seemed interested in modernization of his property and the use of sturdy, serviceable equipment installed in accordance with accepted construction methods.

In discussions of rates for service the general opinion indicated that subscribers were willing to pay a rate which would guarantee them a dependable, fast and up to date grade of service.

The association's Service Committee feels that it has started a program in Indiana which can and should be extended and that by a continuation of its efforts, both by repetition and expansion it can be of much assistance in strengthening the weak spots in Indiana's telephone network. Both the Executive Committee and Board of Directors of the association are backing the efforts of the Service Committee and believe that its work should accomplish much good in Indiana.

◆

Minnesota Commission Approves Rate Boosts and Property Sale

The Minnesota Railroad & Warehouse Commission has approved an annual increase in rates, ranging from $5 to $6.50, for the Balaton-Russell Telephone Company.

Central Telephone Company, serving Avoca, in Murray county, was authorized to install automatic equipment and apply new monthly rates of $2.50 to $4.25.

Sale of the properties of the Perley Cooperative Telephone Association, Perley, to the Norman County Telephone Company also was approved.

ACORN LONG LIFE DROP WIRE SPANS TODAY'S SHORTAGE

ACORN

INSULATED WIRE

ACORN INSULATED WIRE CO., INC.
225 King Street, Brooklyn 31, N. Y.
Leich Sales Corp., 427 W. Randolph Street, Chicago, Ill.
Lindsay Supply Co., 4815 Superior Ave., Cleveland, Ohio

Experienced linesmen the world over have learned to depend on Bashlin equipment. *Safety belts with sliding "D" ring have been a Bashlin feature for more than 10 years.* Play safe at all times . . . use Bashlin Linemen's Equipment. Write for catalog today.

W.M. BASHLIN COMPANY
GROVE CITY 1, PA.

Suppliers' News Briefs

George Ernst Completes 50 Years With Kellogg

George Ernst, 67, veteran employee in the jobbing department of Kellogg Switchboard & Supply Company, Chicago, recently was presented with a diamond studded service pin for 50 years' service with the company, at a luncheon held in his honor at the Clearing Club. The emblem was presented to him by James H. Kellogg, president, whose grandfather, Milo G. Kellogg, had founded the firm less than a year before Mr. Ernst began work for the concern.

Mr. Ernst, senior employee at Kellogg from the standpoint of longevity, is one of the very few industrial employees in the metropolitan Chicago area who has 50 years' service with the same company. When he began work for the Kellogg company in February, 1898, the original plant, a former Highland Park schoolhouse, was still in use.

◆

W. J. Caverley New Vice-President Leich Electric Company

R. W. Siemund, president, recently announced the appointment of W. J. Caverley to the position of executive vice-president of the Leich Electric Company.

Mr. Caverley comes to Leich from the Automatic Electric Company where he was chief executive of the manufacturing division of the Gary group. His long and varied executive experience in every branch of the company, where he started in 1929, will prove of great benefit in the long range general expansion program now under way at Leich Electric Company.

His first association with the Independent industry was when he became assistant treasurer of the Associated Telephone & Telegraph Company. Later he served as treasurer of Automatic Electric Company and in 1934 was elected president of Automatic Electric Sales Corporation, with supervision over all domestic selling operations.

In 1936 Mr. Caverley was made

W. J. CAVERLEY

vice-president and general manager of Automatic Electric Company and assumed direction of all manufacturing and allied operations. In 1944 he became executive vice-president and in 1945 Mr. Caverley was elected president of Automatic Electric Company, which position he held until his advancement to the position of chief executive of the manufacturing division.

Previous to his telephone work Mr. Caverley was associated with the Chicago and Northwestern Railroad as accountant, and with the well known Arthur Anderson & Company, public accountants. He was also connected with the Biflex Company, makers of automotive specialties.

◆

Federal Expands Mobile Equipment Sales Force

William E. Hanna, has been appointed by Federal Telephone & Radio Corporation, Clifton, N.J., affiliate of International Telephone & Telegraph Corporation, as sales engineer for mobile communications equipment in Illinois, Wisconsin, and Minnesota. His operations will be carried on from Federal's Chicago office, 343 No. Michigan Blvd.

Mr. Hanna has been in the radio and electronics industry for many years, starting as a radio amateur in 1919. Prior to joining Federal he was associated with the American Phenolic Corporation, for which he acted as Chicago sales representative.

◆

Associated Research Issues Precision Instruments Catalog

A wide range of precision instruments for industry and utility are contained in a new catalog compiled by Associated Research, Incorporated.

Copies of the catalog may be obtained direct from Associated Research, Incorporated, 231 S. Green Street, Chicago 7, Illinois.

◆

All-Wheel-Drive Conversions For 1948 Ford Models

Marmon-Herrington Company, Inc., Indianapolis, Indiana, originator of All-Wheel-Drive conversions for Ford vehicles, has announced that it is now in production on the All-Wheel-Drive conversions for the new 1948 Ford models.

Marmon-Herrington All-Wheel-Drive places driving power in the front wheels as well as the rear. The manufacturer states this increases immensely the tractive power of the vehicles, enabling them to negotiate deep mud, sand or snow, steep hills and mountain grades with exceptional speed and ease—to perform as efficiently and reliably off the highway as on. Marmon-Herrington All-Wheel-Drive converted Fords are used principally on work that is too difficult for vehicles of conventional drive.

Although emphasis is being placed on trucks, Marmon-Herrington will convert all standard 1948 models to All-Wheel-Drive—passenger cars, station wagons and commercial trucks converted to 4-wheel-drive—larger truck models converted to both 4-wheel-drive and 6-wheel-drive. Gross vehicle weights range up to 35,000 pounds.

Marmon-Herrington All-Wheel-Drive is designed and engineered specifically for Fords. It is not an attachment, but is actually built into each

FLOTROL -

THE ALL-NEW BATTERY CHARGER OFFERS THESE OUTSTANDING ADVANTAGES:

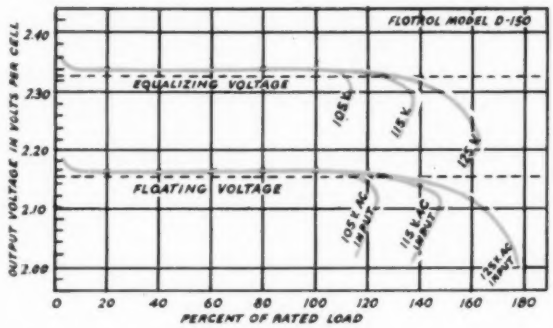
* economy

Flotrol can save up to 20% per year on power costs! Here's a service unit that will pay for itself in an average of five years. Flotrol earns while it saves.

* reliability

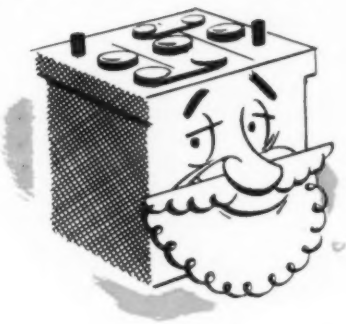
Flotrol has no moving parts! Its unique design eliminates all expendables such as vacuum tubes, motors, etc. Mechanical failures that disrupt service are taboo with Flotrol.

* voltage regulation

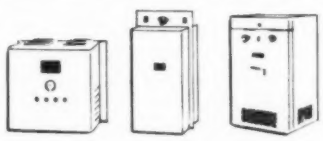


Flotrol keeps your battery fully charged at all times—plus that, Flotrol responds instantaneously to load requirements. Your battery actually never knows the work of normal operation. The current demand is supplied by the Flotrol charger while your battery rests.

* long battery life



Flotrol keeps your battery in tip-top condition through accurate floating voltage. Your battery sleeps while Flotrol does the work—Flotrol guarantees your battery a full life span.



Flotrol, the all-new battery charger, is available in single phase models from 1-ampere, 24-volts, through 24-amperes, 50-volts, and in 3-phase models in 25, 50, 75 and 100-amperes, 50-volt ratings. Flotrol is small, silent and completely dependable. Investigate Flotrol today. Write for your free copy of Bulletin 137.

ASK YOUR DISTRIBUTOR ABOUT FLOTROL

FLOTROL TRADE MARK

PARTNERS IN DEPENDABILITY

SUB-CYCLE

LORAIN PRODUCTS CORPORATION • DEPT. 3 • 1122 F ST., LORAIN, OHIO

"Endurance"

TELEPHONE WIRES

DROP—BRIDLE—INTERIOR DUCT — FIXTURE — TREE AND GROUND WIRE or RUBBER and PLASTIC DROP WIRE

TWISTED PAIR and PARALLEL in NEOPRENE

Manufactured to exacting specifications, utilizing advanced techniques and modern equipment under positive laboratory control.

Distributed by

KELLOGG SWITCHBOARD AND SUPPLY CO.
Chicago 38, Illinois

GENERAL INSULATED WIRE WORKS, INC.
PROVIDENCE, RHODE ISLAND

Our

YEARS OF EXPERIENCE IS AT YOUR SERVICE

TELEPHONE ENGINEERING

•

Underground Construction

•

Overhead Construction

•

SHELY Construction Co.

P. O. BOX 1291

LEXINGTON, KENTUCKY

vehicle, becoming an integral and permanent part.

The following are the major changes made by Marmon-Herrington in converting Fords to All-Wheel-Drive: Original front axle assembly is removed and new front driving axle installed. This axle has standard Ford differential, ring and pinion gears and is equipped with specially-designed constant velocity universal joint steering ends for safe, easy steering.

On units smaller than one ton a transfer case is installed for transmitting power to the front-axle propeller shaft. On units of one ton and over a new two-speed auxiliary transmission of Marmon-Herrington's own design is installed. This provides an exceptionally low final reduction for really tough going.

Necessary changes are made in steering assembly and hydraulic brake steering assembly and hydraulic brake.

◆

Employees Contribute 25,000 Years of Service

The Electric Storage Battery Company, Philadelphia, Pennsylvania, recently honored their 1,000th employee to complete 25 years of service with Exide.

R. C. Norberg, president of the company, presented Miss Caroline L. Fleck with a gold watch in recognition of her quarter of a century service. He announced that her record was doubly important because "never during her 25 years of service was she ever so much as one minute late."

Miss Fleck, who is in charge of a group of girls in Exide's separation department, has a brother and a niece in the company. Her brother, Fred G. Fleck, an experimental machine shop employee has been with Exide 35 years; and his daughter Norma, has worked for the company six years.

Mr. Norberg said there are 893 living members of the Exide Quarter Century Club, 112 of whom are pensioners and 781 of whom are active employees. Nearly 20 per cent of the companies 4,000 employees have been with Exide 25 years or more. More than one-half the workers have more than 10 years service to their credit.

◆

Federal Tel. & Radio Corp. Adds to Sales Force

Boris B. Zelman has joined the Federal Telephone & Radio Corporation, Clifton, New Jersey, affiliate of International Telephone and Telegraph Corporation, to act as sales engineer for mobile radio telephone equipment, covering the states of Indiana, Michigan, Kentucky and Ohio. His operations will be carried on from FTR's office at 100 Kingsland Road, Clifton.

BORIS B. ZELMAN

Mr. Zelman was formerly associated with Design Associated, Ltd., New York City, and was in charge of the development division. Several years ago he conducted a survey for Westinghouse among radio station managers and chief engineers who had applied for FM licenses. This survey was to determine what features in design and layout were most desired from an operational and technical standpoint by the people that were actually going to use the equipment. The Westinghouse FM transmitter line was designed on the basis of this survey.

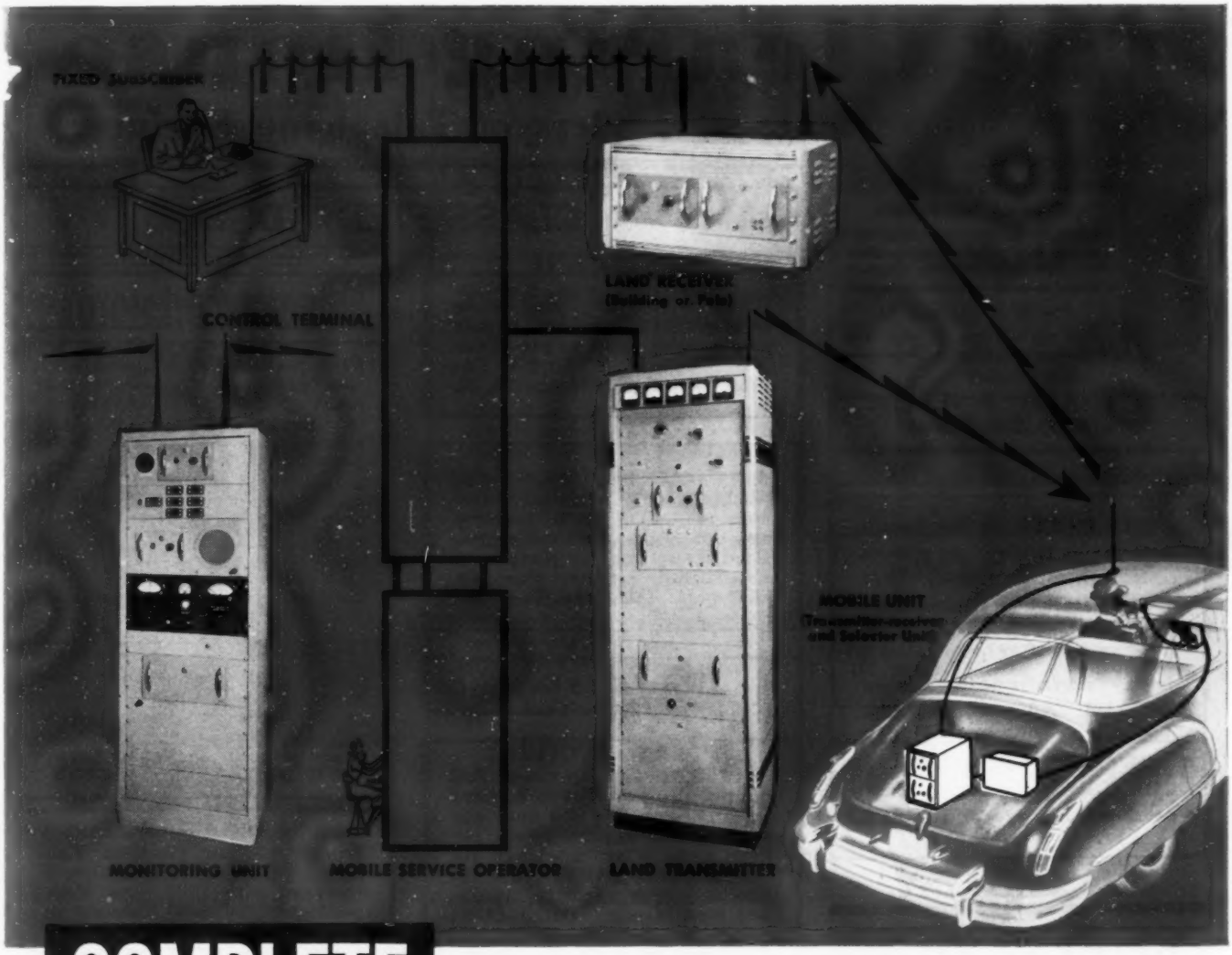
◆

Kellogg's New Voice Frequency Telephone Repeater

Kellogg Switchboard & Supply Company, Chicago, is now in production on the company's new voice frequency telephone repeater, according to an announcment made recently by F. M. Parsons, sales manager. This unit provides gains as great as 20 db, thereby greatly increasing transmission on telephone circuits which do not otherwise meet commercial standards.

Mr. Parsons said that a number of telephone companies already have the new Kellogg repeaters in service. Some of the users include the Northern Ohio Telephone Company, Bellevue, Ohio, the Peninsular Telephone Company, Tampa, Florida, and the Oregon-Washington Telephone Company, Hood River, Oregon. Additional repeaters are soon to be installed by the Florida Telephone Corporation, Ocala, Florida, and the Geneva Telephone Company, Geneva, Ohio. The former company will install 18 repeaters while

(*Please turn to page* 80)



COMPLETE MOBILE TELEPHONE EQUIPMENT

by Federal

Gives your mobile subscribers the finest radiotelephone service, with minimum maintenance and installation expense.

YOUR MOBILE-SERVICE subscribers want and expect the same convenient and dependable telephone service that they have always had with their home and office telephones. And *you* want equipment that provides this type of service—yet is easy to install, operate and maintain.

Federal's complete FM urban radiotelephone systems offer you *both* advantages—proved performance and time-saving simplicity of installation and servicing. Mobile units are designed for dependable performance under all types of vehicular operation. Transmitter and receiver sections, with plug-in connectors, can be removed and replaced in a few seconds.

When you get your entire system from Federal—you *know* that all components are designed and matched to work together, as a perfectly coordinated communications network. Regardless of the *size* of your system, Federal can help you on the complete job—from planning and engineering to final installation and operation.

Write Federal today for complete information. Dept. I 849.

FTR
An IT&T Associate

KEEPING FEDERAL YEARS AHEAD... is IT&T's world-wide research and engineering organization, of which the Federal Telecommunication Laboratories, Nutley, N. J., is a unit.

Federal Telephone and Radio Corporation

100 KINGSLAND ROAD, CLIFTON, NEW JERSEY

In Canada: Federal Electric Manufacturing Company, Ltd., Montreal, P. Q.
Export Distributors: International Standard Electric Corp. 67 Broad St., N. Y.

The Clearing House

For the Convenience of readers of Telephone Engineer

Chemical Dehydrators

Automatically controlled, using flake calcium chloride for preventing dampness and condensation in automatic totally enclosed telephone exchanges.

The H. J. Kaufman Co.
13215 Roselawn Ave., Detroit 4, Mich

Want Ad Rates

THE RATES for this department are as follows: 15c a word, cash with order, please. Box number service if desired. We Run Positions Wanted Ads for Veterans Free of Charge. For display advertisements ask for rate card. Address all correspondence to: TELEPHONE ENGINEER PUBLISHING CORPORATION, 7720 Sheridan Road, Chicago 26, Illinois.

SPLICER'S TOOLS
Of Top Quality by **UNIQUE**

- FURNACES
- SOLDER POTS
- BLOW TORCHES
- WIPING CLOTHS
- BALANCED LADLES
- SOLDER IRON HANDLES
- THAWING TORCHES
- FOLDING SAFETY SHIELDS

Protect Public, Splicer, and Furnace. No. 50 C Shield shown here. Of 20 Ga. galvanized steel. Reinforced edges. 23"x17" x17". No. 50—four-sided with grate. No. 50 A—same without grate.

Your Jobber Has These Tools

UNIQUE MANUFACTURING CO., INC.
221 W. Walton St., Chicago 10, Ill.

CLASSIFIED ADS

HELP WANTED: Man to rebuild small switchboards. Steady employment, good wages. Telephone Repair & Supply Co., 1760 Lunt Ave., Chicago 26, Ill.

HELP WANTED: Experienced combinationmen, lineman, cable splicers . . . up to 32 years of age; common battery exchanges. Good telephone property and good future. Write Box No. 8542, c/o Telephone Engineer.

Wanted to Buy

WANTED: Two position, full multiple PBX switchboard, wired for approximately 200 lines and equipped for approximately 140 lines (line relay type). In replying, please give full description as to type, capacity, trunks, and cord circuits. OHIO CONSOLIDATED TELEPHONE CO., 824 Seventh St., Portsmouth, Ohio.

WANTED TO BUY: One ten line magneto switchboard, with one or two trunk lines. Must be in good condition. Potosi Telephone Co., Potosi, Missouri.

Position Wanted

POSITION WANTED: Veteran, six years experience telephone accountant and auditor. Desires top accounting job with Class A company. Will relocate. Best references. Box No. 8540, c/o Telephone Engineer.

USE
TELEPHONE ENGINEER AND MANAGEMENT'S CLEARING HOUSE
To locate workers—jobs—merchandise. A small ad covers the field.

For Sale

FOR SALE: 275 Magneto station exchange, located in the heart of the Red River Valley, in Eastern Central North Dakota. Gross income for 1947, $8,701.00. Will sell for 2½ times gross plus real estate. Exchange in 8 room residence with hot water automatic heating system. Will sell exchange separate if so desired. Would like to sell on account of other business interests. Write Box 225, Hunter, N. D.

FOR SALE: Six-foot W.E. type handset cords, rubber covered, three conductors, spade tipped @ .25. Three circuit switchboard plugs @ .35. Vonhet Corp., 118 W. Main St., Elmsford, N. Y.

FOR SALE: Central Office Equipment. Ten Positions Kellogg Masterbuilt Switchboard equipped with 1200 lines. Four positions like new, balance in good condition. Line relays, frame, and power equipment included. Automatic equipment being installed for Fall 1948 cutover. Winter Park Telephone Company, Winter Park, Florida.

BUCKEYE

For a Quarter of a Century Rebuilders of the Independents' Telephone Equipment.

FOR RECONDITIONED TELEPHONE AND SWITCHBOARD EQUIPMENT

Depend on

Buckeye Telephone & Supply Co.
COLUMBUS 6, OHIO

DO YOU NEED "KNOW HOW" for a better job . . . do you want to catch up on developments in telephony today? For the answers to questions in general and your problems in particular, we recommend highly the books listed in this issue of TELEPHONE ENGINEER & MANAGEMENT.

AUTOMATIC TELEPHONE PRACTICE

(Fifth Edition)

Hershey On Strowger Automatic Since 1917.

160 Pages, 8½ x 11

PRICE $5.00

Postpaid in U.S.A.

($5.35 in Canada)

ORDER FROM

Telephone Engineer Pub. Corp.

7720 Sheridan Road

CHICAGO 26, ILL.

Just Published

TROUBLES OF ELECTRICAL EQUIPMENT

Their Symptoms, Causes and Remedy

By H. E. Stafford

Electrical Engineer, Marathon Paper Mills of Canada, Ltd.

454 pages, 6 x 9, $4.50

Here is a handy trouble-shooting manual—packed with the kind of practical pointers you can use on the job from day to day to put an end to your motor, transformer, relay, and other equipment troubles. It covers both alternating-current and direct-current apparatus usually found in the average industrial plant. In plain, easy-to-understand language, it shows you how to find and recognize the troubles—tells you what to do to correct them swiftly and surely.

Order copies from

TELEPHONE ENGINEER PUBLISHING CORP.

7720 N. Sheridan Rd., Chicago 26, Ill.

USE
TELEPHONE ENGINEER AND MANAGEMENT'S CLEARING HOUSE

To locate workers—jobs—merchandise. A small ad covers the field.

STANDARD ART CODE

For

Streamline Telephone Numbers

Permits by—Rachel Harriet Stotts,

Box-371. Chariton, Iowa. U.S.A.

Telephone Engineers

CYRUS G. HILL
ENGINEERS
ALLEN K. HAMILTON

Plant—Traffic—Commercial
Valuations and Original Cost

231 S. La Salle St., Chicago 4

MANFRED K. TOEPPEN
ENGINEER

Consultation - Investigation - Reports

639 South Spring Street, Los Angeles, Calif.
261 Broadway, New York 7, N. Y.

SLOAN, COOK & LOWE
CONSULTING ENGINEERS

Suite 1344 — 120 South LaSalle Street
CHICAGO

Appraisals—Original Cost Studies
Depreciation, Financial, and Other Investigations

JAY G. MITCHELL

Public Utility
Operating and Management
Economics

P.O. Box 523 — **Evanston, Ill.**

finishing cloths

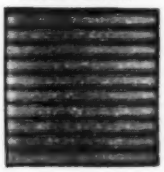
packed in cartons

CABLE-SPLICERS WIPING CLOTHS

Wipe Perfect Joints

on lead-sheathed cable splices

catch cloths



sealed in wax paper wrappers

GEO. E. WILLIAMS, *Mfg.*

3035 Aldrich Avenue So. — **Minneapolis 8, Minn.**

Engineering Service Associates
Consultants

Plant — Engineering — Traffic
Mobile Radio — Carrier Systems

Nunn, Colorado

Cedar Poles

MAC GILLIS & GIBBS COMPANY

Wells Bldg.) Milwaukee 2, Wis.

★ ★

Northern White and Western Red Cedar Poles—Plain or Butt-Treated

USE AMCON

AMERICAN TELEPHONE and TELEGRAPH CONDENSERS

. . . Dependable!

AMERICAN CONDENSER CO.

4410 NO. RAVENSWOOD AVE., CHICAGO 40, ILLINOIS

Specification sheets on request

"BLACK BEAUTY" POLES

. . . are armored for longer service

Deep, penetrating charges of top-grade creosote serve to armor-plate these tough, long-wearing "Black Beauty" poles against every form of nature's attacks. "Black Beauty" poles are processed by the patented "empty cell" method which draws out excess moisture and then fills each cell with preservatives. Specify "Black Beauty" when you order poles.

Symbol of "Black Beauty's" armor-clad protection against termites, rot and fungi.

Recommended and Distributed by

AUTOMATIC ELECTRIC SALES CORPORATION

1033 W. Van Buren St. Chicago 7, Ill.

OLIVER

TRANSPOSITION BRACKETS

These important items of telephone and telegraph line hardware are representative designs, based upon practical experience extending over many years. Complete sizes and details of these and other designs are given in Oliver Catalog 43.

OLIVER
IRON AND STEEL
CORPORATION
SOUTH TENTH & MURIEL STREETS
Pittsburgh 3, Pennsylvania

MAKERS OF POLE LINE MATERIALS SINCE 1894

the latter plans to place two of them in operation.

According to Kellogg engineers, the repeater is easy to install and simple to maintain. Tools and soldering irons are unnecessary for adjusting gain as accurate dial controls permit quick, easy adjustments from the equipment side of the unit.

The new repeater is available in models 3-A and 3-B for 24 volt and 48 volt battery operation respectively, and in model No. 4 for operation from a 110-120 v, 60 cycle alternating current source. It consists of two vacuum tube amplifiers which amplify voice signals in both directions on a two-wire circuit. It may be used as an intermediate repeater between two central offices, or as a terminal repeater.

For further information on the No. 3-A, 3-B or 4 Voice Frequency Telephone Repeaters, write Kellogg Switchboard & Supply Co., 6650 Cicero Ave., Chicago 38, for the new 8-page bulletin "Kellogg Telephone Repeater."

◆

Sargent & Co. Purchases Wm. Schollhorn Company

As of February 24, Sargent & Company of New Haven, Conn., purchased the operating assets of The Wm. Schollhorn Company, also of New Haven.

The sale involved purchase by Sargent & Company of the Schollhorn trade marks and patents and the rights to continue the manufacture of the nationally famous Schollhorn and Bernard pliers as well as the special-purpose tools that Schollhorn has been supplying to nearly 200 other manufacturers. It involved also the purchase of machinery and other assets but not the Schollhorn factory building which will, however, continue to be occupied by Sargent & Company on a rental basis.

The Wm. Schollhorn Company was founded over 75 years ago and during the period since then has developed many special tools of wide appeal. Perhaps the most famous of these is the Bernard line of pliers which not only have a wide domestic use, but have also been adapted for many industrial uses.

Other familiar products of this old time concern are pruning and lopping shears, leather punches, paper punches, staple removers, tin snips, and many highly specialized tools designed for special purpose use in industry.

Sargent & Company, a somewhat older concern, is one of the larger manufacturers of builders hardware and allied products. They employ several thousand employees and their products are known all over the world.

Index to Advertisers

Acorn Insulated Wire Co. 73
Alphaduct Wire & Cable Co..... 71
American Coach & Body Co. ..... —
American Condenser Co. 79
American Creosoting Co. ..... —
American Cross-Arm, Inc. ..... —
American Steel & Wire Co. ..... —
American Electric Heater Co. ..... —
American Tel. & Tel. Co. 20, 21
Armstrong Cork Co., Whitall Tatum Glass Insulator Dept. ..... —
Automatic Electric Co. ..... —
Automatic Electric Sales Corp. 42, 43, 58, 66, 68, 80
Automatic Telephone & Electric Co., Ltd. 64

Barco Manufacturing Co. ..... —
Barber Greene 72
Barnstead Still & Sterilizer Co. .... —
Bartlett Mfg. Co. ..... —
Bashlin Co., W. M. 73
Berry & Co., L. M. ..... —
Bethlehem Steel Corp. 19
Biddle Co., James G. ..... —
Blackburn Specialty Co. ..... —
Brach Mfg. Co., L. S. 82
Brown Wood Preserving Co. ..... —
Buckeye Telephone & Supply Co. .. 55
Buckingham Mfg. Co. ..... —

Cable Spinning Equipment Co. .... —
Calculagraph Co. ..... —
Carpenter Mfg. Co. ..... —
Chance Co., A. B. 54, 63
Chapman Chemical Co. 49
Churchill Cabinet Co. ..... —
Clayton & Lambert Mfg. Co. 66
Coffing Hoist Co. ..... —
Colfax Lumber Creosoting Co., Inc. 62
Collyer Insulated Wire Co., Inc. .... —
Columbia Steel Co. ..... —
Commercial Cord & Supply Co. 66
Connecticut Tel. & Elec. Div. ..... —
Continental Farm Machine Co. .... —
Cook Electric Co. 57
Cope, T. J., Inc. ..... —
Copperweld Steel Co. 7
Cummings Machine Works ..... —

Defiance Alloyed Products Co., The. —
Dicke Tool Co. ..... —
Dillon & Co., Inc., W. C. ..... —
Dow Chemical Co., The ..... —
Drake Electric Works, Inc. ..... —
du Pont de Nemours, E. I. Co., Inc... —
D-X Products Co. ..... —

Ederer, Inc. ..... —
Electric Products Co., The ..... —
Electric Storage Battery Co. 3
Engineering Service Associates 79
Estwing Mfg. Co. ..... —
Federal Tel. & Radio Corp. 13, 73
Forged Steel Products Co. ..... —
Four Wheel Drive Co., The ..... —
G & W Electrtic Specialty Co., Inc... —
General Cable Corp. ..... —
General Electric Co. ..... —
General Insulated Wire Works, Inc. 76
General Telephone Directory Co. ... 2
Gould Battery Co. ..... —
Graybar Electric Co. 59
Great American Industries ..... —

Hammond Drierite Co., W. A. ..... —
Hatheway Patterson Co. ..... —
Highway Trailer Co. 8
Hill, Cyrus G. 79
Hirsch Organization, Gustav 52
Homelite Corp. 24
Hubbard & Co. ..... —
Hykon Mfg. Co. ..... —

Independent Telephone Pioneer Association ..... —
Independent Telephone Repair Co. . —
Indiana Steel & Wire Co. 18, 63
Industrial Instruments, Inc. ..... —
International Automatic Electric Corp. 68
International Harvester Co. ..... —

Jaques Power Saw Co. ..... —
Joslyn Mfg. & Supply Co. ..... —

Ka-Mo Tools, Inc. ..... —
Kaufman Co., H. J. 78
Kearny Corp., Jas. R. 65
Kellogg Switchboard & Supply Co. 14, 15, 16, 17, 60, 61
Kester Solder Co. ..... —
Kennecott Wire & Cable Co. ..... —
Klein & Sons, Mathias ..... —
Koiled Kords. Inc. 12
Kwikheat Soldering Irons ..... —

Leeds & Northrup Co. ..... —
Leich Sales Corp. 38, 39
Lenz Electric Mfg. Co. ..... —
Loomis Advertising Co. 45
Lorain Products Corp. 57, 75

MacGillis & Gibbs Co., The 79
Marmon-Herrington Co., Inc. ..... —
Meredith Co., Inc. Wm. C. 55
Miller Mill Co., T. R. ..... —
Mines Equipment Co. ..... —
Mitchell, Jay G. 79
Moss Tie Co., T. J. ..... —
Motorola, Inc. ..... —
Murdock, Wm. J. ..... —
Mutual Liquid & Gas Co. 22

National Carbon Co. ..... —
National Electric Prod. Co. ..... —
National Fireproofing Co. 82
National Telephone Supply Co. 63, 83
Neale Construction Corp. 81
Newman Mfg. Sales Co., Inc. ..... —
North Electric Mfg. Co. 84

Oliver Iron & Steel Corp. 80
Owens-Illinois Glass Co. 6

Page & Hill Co. 69
Paragon Electric Co. ..... —
Plastic Wire & Cable Corp. ..... —
Premax Products 81
Ray-O-Vac Co. ..... —
Raytheon Mfg. Co. 5, 57
Rebuilt Electric Equipment Co .... —
Reliable Electric Co. 23
Remler Co., Ltd. ..... —
Rhodes, M. M. & Co. ..... —
Roebling's Sons Co., John A. ..... —
Roll-A-Reel 56
Runzel Cord & Wire Co. 47

Schauer Machine Co., The 58
Seymour Smith & Sons, Inc. ..... —
Shelley Construction Co. 76
Sherron Metallic Corp. 11
Sloan Coofle & Lowe 83
Sound Equipment Corp. ..... —
SoundScriber Corp. 28
Stromberg-Carlson Co. 26, 27, 56, 57 62, 63
Sturgis Posture Chair Co. ..... —
Suttle Equipment Co. 18
Specialty Device Co. ..... —
Stotts, Rachel 79
Superior Mfg. Co. ..... —
Sylvania Electric Products, Inc. ... —
Syntron Company ..... —

Taylor-Colquitt Co. ..... —
Telephone Advertising Inst. ..... —
Telefon Fabric Automatic a/s ..... —
Telephone Answering & Recording Corp ..... —
Telephone Engineer Pub. Corp. . 50, 55
Telephone Repair & Supply Co. 69
Telephone Sales & Service Co. ..... —
Telkor, Inc. ..... —
Templeton, Kenly & Co. ..... —
Tennessee Coal, Iron & Railroad Co. —
Texas Creosoting Co. ..... —
Tinnerman Products, Inc. ..... —
Toeppen, Manfred K. 79
Transandean Associates, Inc. ..... —
Turner Brass Works 50

Union Supply & Electric Co. ..... —
Unique Mfg. Co. 79
United States Independent Telephone Association ..... —
U. S. Motors Corp. ..... —
U. S. Rubber Co. 52
U. S. Steel Corp. ..... —
United States Steel Export Co. ..... —
Utilities Service Co. ..... —

Vulcan Electric Co. ..... —

Ward Leonard Electric Co. ..... —
Western Electric Co. 70
Whitney Blake Co. 67
Wilcox Electric Co. ..... —
Williams, Geo. E. 79
Worth Hotel 54

York Hoover Corp. ..... —

Engineering Construction and Maintenance of Outside Telephone Plants

Let's discuss your problems
We can handle any job —

NEALE CONSTRUCTION CO.
Topeka, Kansas

PREMAX

Cost Less Than Stenciling

ABC
12345

Stamped and Embossed Metal
Letters and Figures
Will Outlast the Average Pole

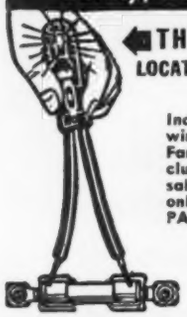
Long experience of many telephone companies has demonstrated that Premax Stamped and Embossed Metal Letters, Figures and Marking Tags can be installed at a lower cost than stenciling.

Premax Markings are clearly visible under all conditions—and will outlast the average telephone pole.

Premax Products
Division Chisholm-Ryder Co., Inc.
4817 Highland Ave., Niagara Falls, N.Y.

Test-O-Lite

TESTS ANY VOLTAGE...
100 to 550 Volts, A.C. or D.C.
Safely, Swiftly, Surely



THE NEON GLOW
LOCATES TROUBLE -INSTANTLY

Indicates hot or grounded wires. Tells AC from DC. Far superior to ordinary clumsy test bulb. Indispensable in shop or home. The only pocket-size tester with PATENTED SAFETY FEATURE.

Life-time guarantee. Purchase thru electrical dealers.

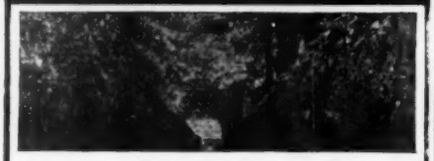
Pat. No. 1,778,883.

RTC-2 VINCENT RARE GAS RELAY

for harmonic or coded bells. Dual purpose device which economically improves both ringing and transmission on party lines. NO MOVING PARTS. Fully guaranteed. Can be installed in a minute.

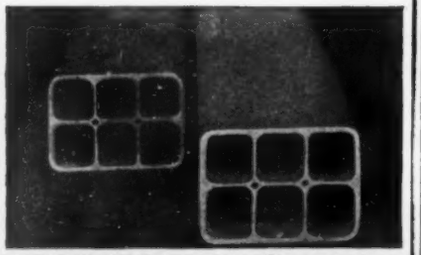
L. S. BRACH Mfg. Corp.
200 Central Avenue Newark, N. J.

SINCE 1889
NATCO
CLAY CONDUIT



The proved and standard Protection for Underground Telephone Cables.

Cheapest in the long run. Highest quality and a full line of shapes.



National Fireproofing Corp.
202 E. Ohio Street, N. S.
PITTSBURGH, PA.

THE BACK OF THE BOOK

By JOHN G. REYNOLDS
Managing Editor

SELL MORE TOLL SERVICE . . .

THE OPENING gun already has been fired starting a big program to sell more long distance useage. Radio —newspapers—window displays—the full power of a big advertising campaign is now under way.

Employees are discovering new selling power as toll salesmen. A friend remarks: "I wonder if a special delivery letter would get to Denver by Saturday?"

"Why don't you call by long distance?" suggests the telephone company employee. "It will cost less than two dollars."

Likely result: One 3 minute call to Denver.

Or the cue may come at the bowling alleys. A team-mate ponders aloud, "I would like to go to Pittsburg this week-end. But I don't know whether I can get accommodations for my family."

"Call the William Penn tonight," the employee advises. "It only costs about fifty cents.

"That low?"

Likely result: One 3 minute call to Pittsburgh.

There is no product telephone employees can be prouder of than long distance service, and prices are very low. However, some of our friends don't know this. When the opportunity arises to recommend a long distance call, look up the rate for your friend in the front of the directory. The price will do the rest.

• • •

ARE WE READY TO SELL OUT? . . .

CONTINUED inflation promises to make price control the number one domestic political issue of the year. The controversy over price is in some respects similar to the acrimonious debate over how to prevent the spread of communism in Europe. Economic security is emphasized as the foundation of faith in the institution of democratic government. The fear is prevalent that the people of the United States, as well as the people of Europe, will abandon their faith if confronted with the appalling instability of uncontrolled inflation and disruption of traditional material values. This approach is tragically false. It denies the existence of ideals and principles which set man apart from the lower animals. It is resulting in proposals that here in our own country will wipe out freedom even before the pinch of postwar dislocations are really felt. These proposals would involve extension of governmental activity and authority on a scale that would irreparably injure the cause of human freedom for which countless hundreds of thousands of American citizens have given their lives, from the revolutionary war to the present.

We should remember during this coming year that the dignity of the individual measured in terms of personal freedom from political coercion of any sort, is priceless. It cannot be traded, bought or compromised, either in Europe or in the United States. It can be preserved only so long as people continue to give it a higher value than any other possession—including life itself.

• • •

DIRECTORY TIME . . .

THE ARRIVAL of 1948 telephone books and the disappearance of the old ones were matters of little interest in most Greater Boston homes, but in some domiciles the annual event meant a household crisis according to the New England Bell. Off to the paper mills with 425,000 battered old 1947 directories went veteran's discharge papers and other valuable items, if other years are any criteria. Although this has been happening for years, a number of directory users still think their telephone book is a good substitute for a desk, wallet, or even bank. Several years ago, a fellow was very lucky to find $1,500 he had hidden in the telephone book and forgotten about. He had to spend two days looking through heaps of books before he found it. Others are more easily discouraged and not so lucky.

Nicotap

THE FAST, DEPENDABLE Nicopress WAY OF MAKING LINE AND DROP WIRE TAPS

THE NICO-TAP IS SPLIT

THERE IS NO NEED OF CUTTING THE LINE TO MAKE THE CONNECTION—JUST SLIP THE SLEEVE OVER THE LINE WIRE AND COMPRESS

12 BWG TO 12 BWG
Stock No. T2-109D

12 BWG TO No. 17-18 DROP WIRE
Stock No. T2-109 x 045D

17-18 B&S TO 17-18 B&S
Stock No. T2-045B

Ask Your Jobber

The National Telephone Supply Company

5100 SUPERIOR AVENUE • CLEVELAND 3, OHIO

Canadian Mfr.—N. SLATER CO., LTD., HAMILTON, ONT., CANADA

Export Distributor—INTERNATIONAL STANDARD ELECTRIC CORP., NEW YORK, N. Y.

THE NATIONAL TELEPHONE SUPPLY COMPANY

QUALITY

Can Keep The Cost Down

Outside and inside plant materials of quality, well installed, provide the greatest possible protection against fluctuating labor costs.

The initial investment may be higher, but the saving in maintenance and repair is substantial.

NORTH "All Relay" central office equipment has a time proven record for low operating cost performance.

Years of experience in the design and manufacture of automatic exchange equipment are available to you. Assure your long range profit position by using the latest NORTH "All Relay" systems.

THE NORTH ELECTRIC MFG. COMPANY

Galion, Ohio